Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

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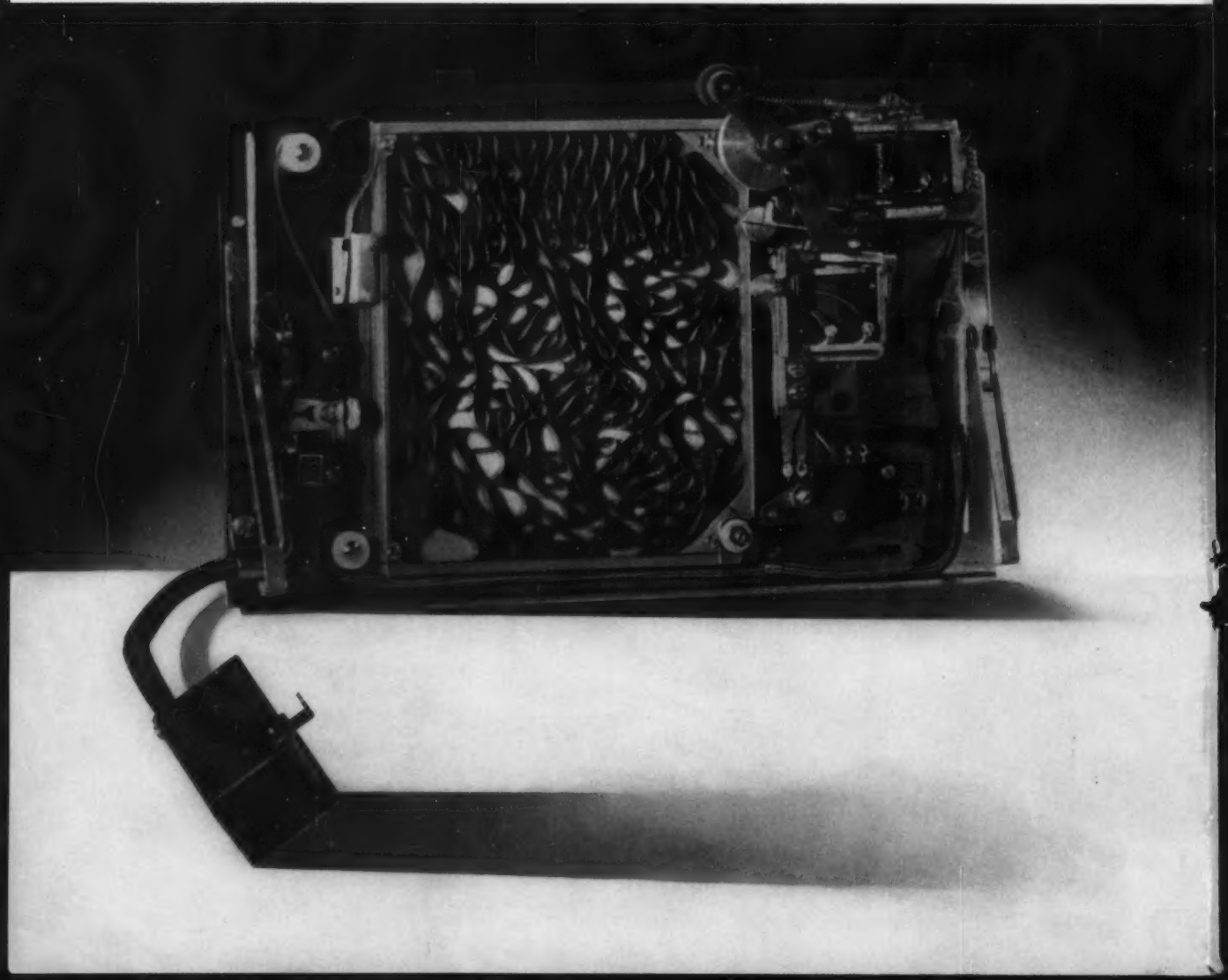

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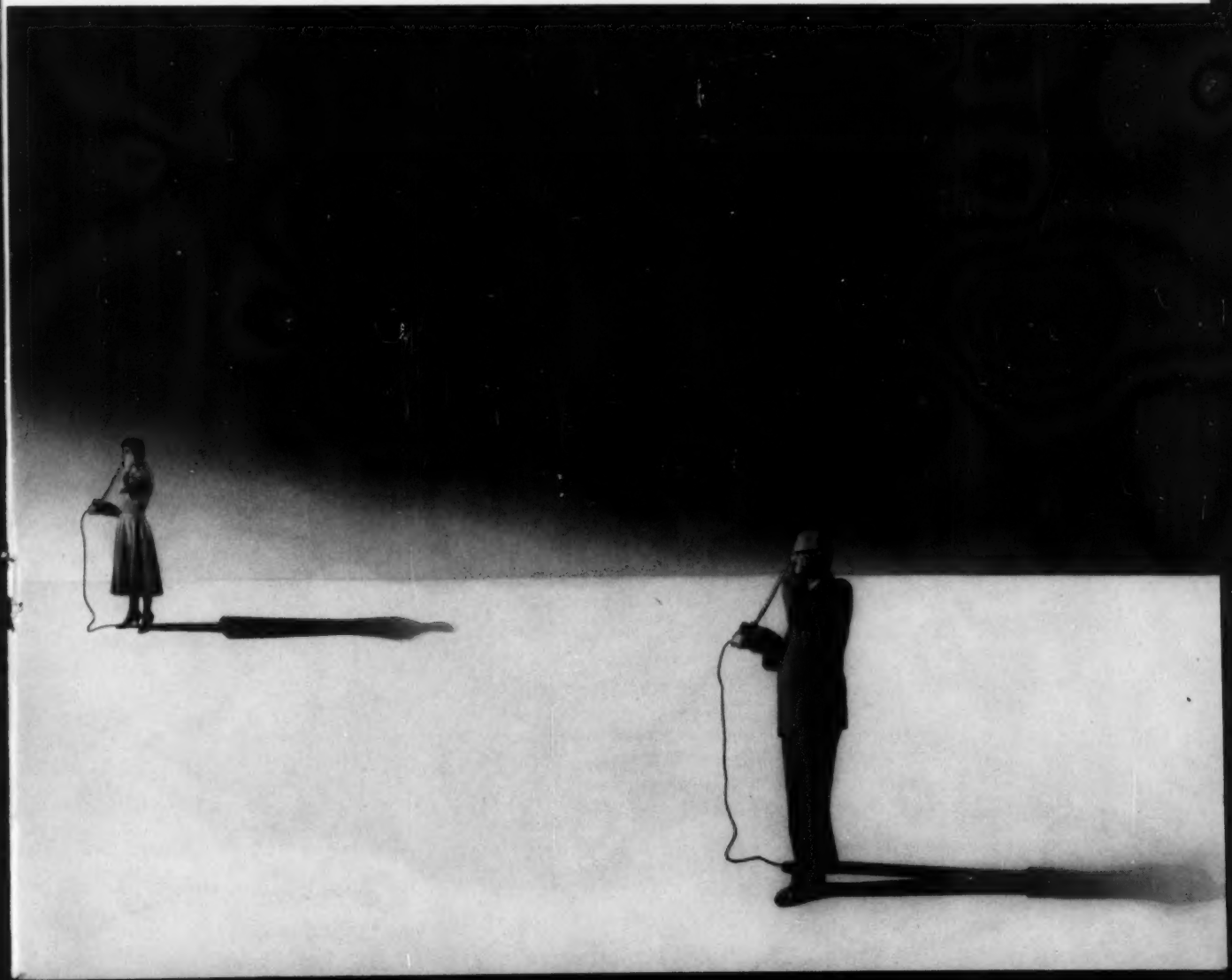

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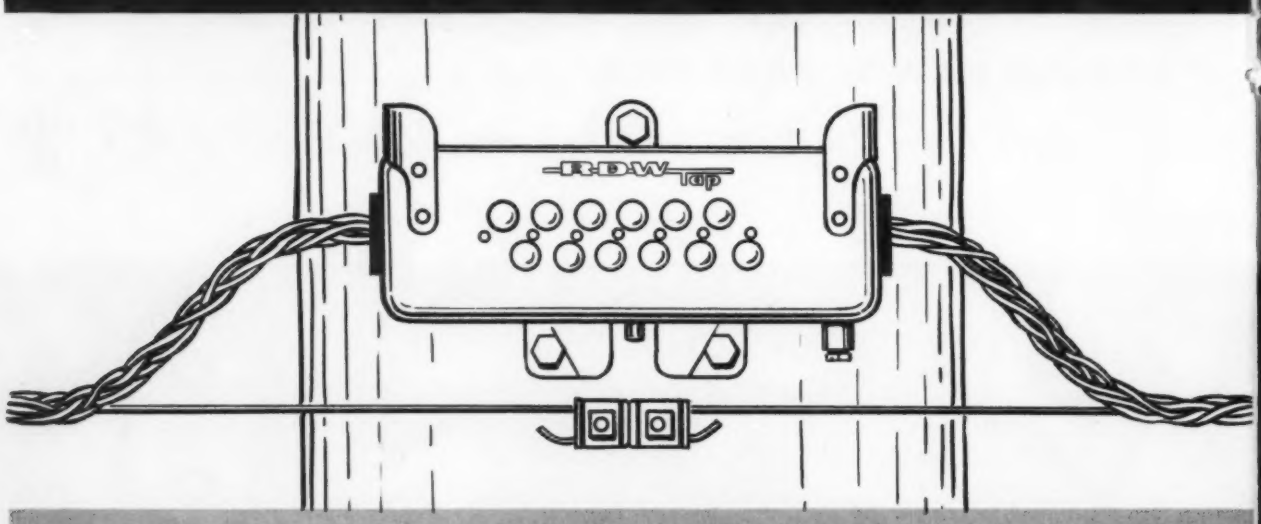

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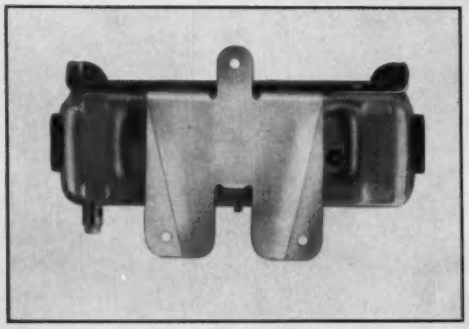
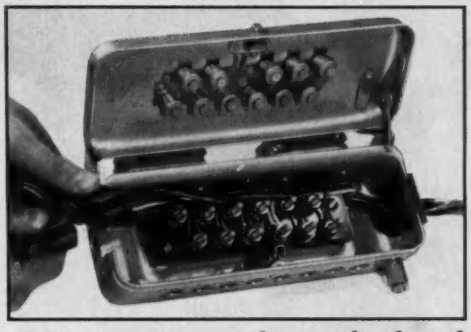


Bracket for mounting direct to the pole without gaining.



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FLASHES AND PLUGS

THE MARCH OF PROGRESS. The magazine *Television Age* recently printed an article discussing the possibility of televised telephone calls. Comments from readers were many and varied and we reprint a few of them below.

One writer explained that he was a suburbanite whose wife is always calling him and taking as much as an hour to describe the dress—and, of course, darling, the hat, shoes and bag—she bought in town today.

She always waits until she gets home to call. With the new seeing-telephone, he feels, she can call him and show him the "things" in a few minutes. He figures the money he'll save on toll charges will more than pay for his darling's purchases.

One ruer pointed out that this new telephone deal will be bad for the working man. No longer will he be able to call in and say he's sick.

But another fellow disagrees with this view. He looks upon the televised telephone call as a boon to the employe who wants to goof off.

In fact, this fellow says that he intends to start a special make-up service. He'll guarantee to make anybody look sick who wants to call the boss and get a day off. And, he claims that, especially in the beginning, it'll be a cinch to melt the hardest-hearted boss. Remember, he says, how everybody looked in the early days of television.

•

SECRETARIAL SERVICE. Mrs. Paul Kaufman of Milwaukee, Wis., had an urgent message the other day for her friend Mrs. Robert Rohde, the *Milwaukee* (Wis.) *Journal* reports. Mrs. Kaufman telephoned the Rohde home and Beaver, 7, a daughter, answered the telephone. She was home alone.

Mrs. Kaufman asked Beaver if she would write down a message for her mother. Beaver said she would. It took her about five minutes to find a pencil and paper.

"Write down 'cancel two reservations,' " Mrs. Kaufman said.

"You'll have to spell those words," said Beaver.

So, letter by letter, Mrs. Kaufman spelled out her message.

Beaver broke in only once. "How do you make an 'R'?" she asked.

Mrs. Kaufman told her how, stroke by stroke.

It took Beaver about 15 minutes to take the message.

"Now, read it back to me," Mrs. Kaufman told her, "so I'll know you have it right."

"I can't," said Beaver, sadly. "I don't know how to read big words."

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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

March 15, 1958

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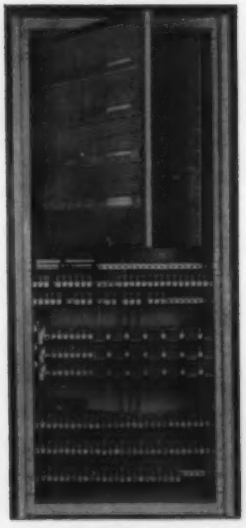

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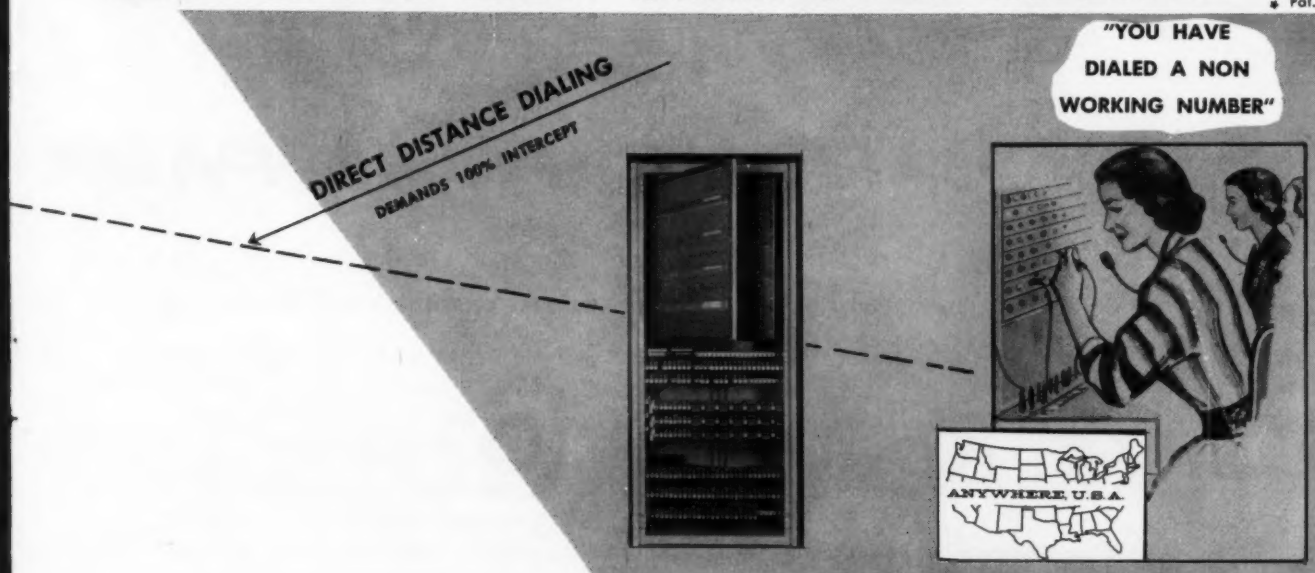

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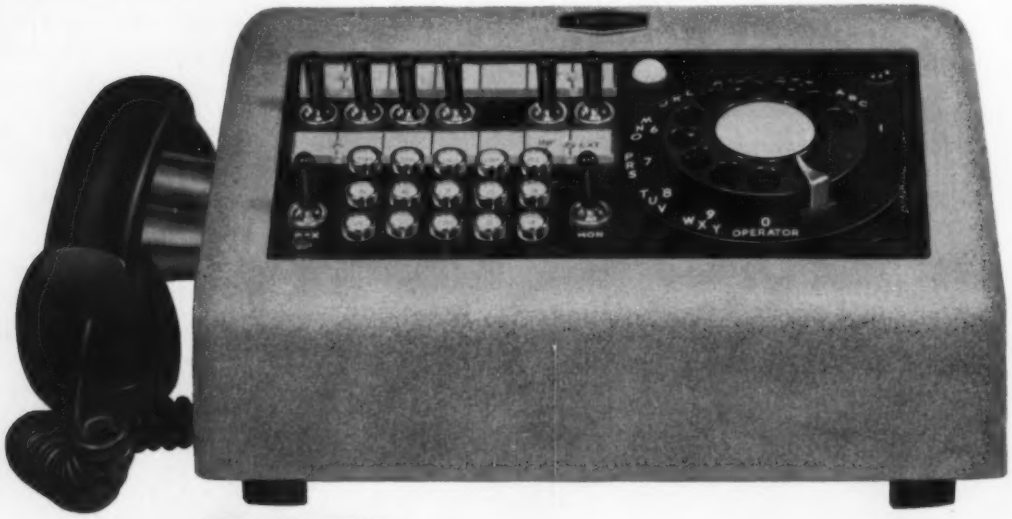

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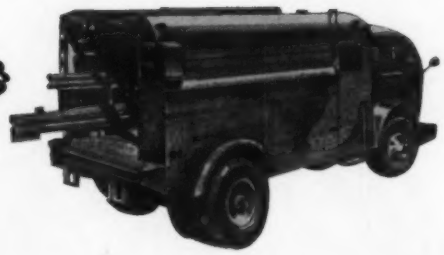

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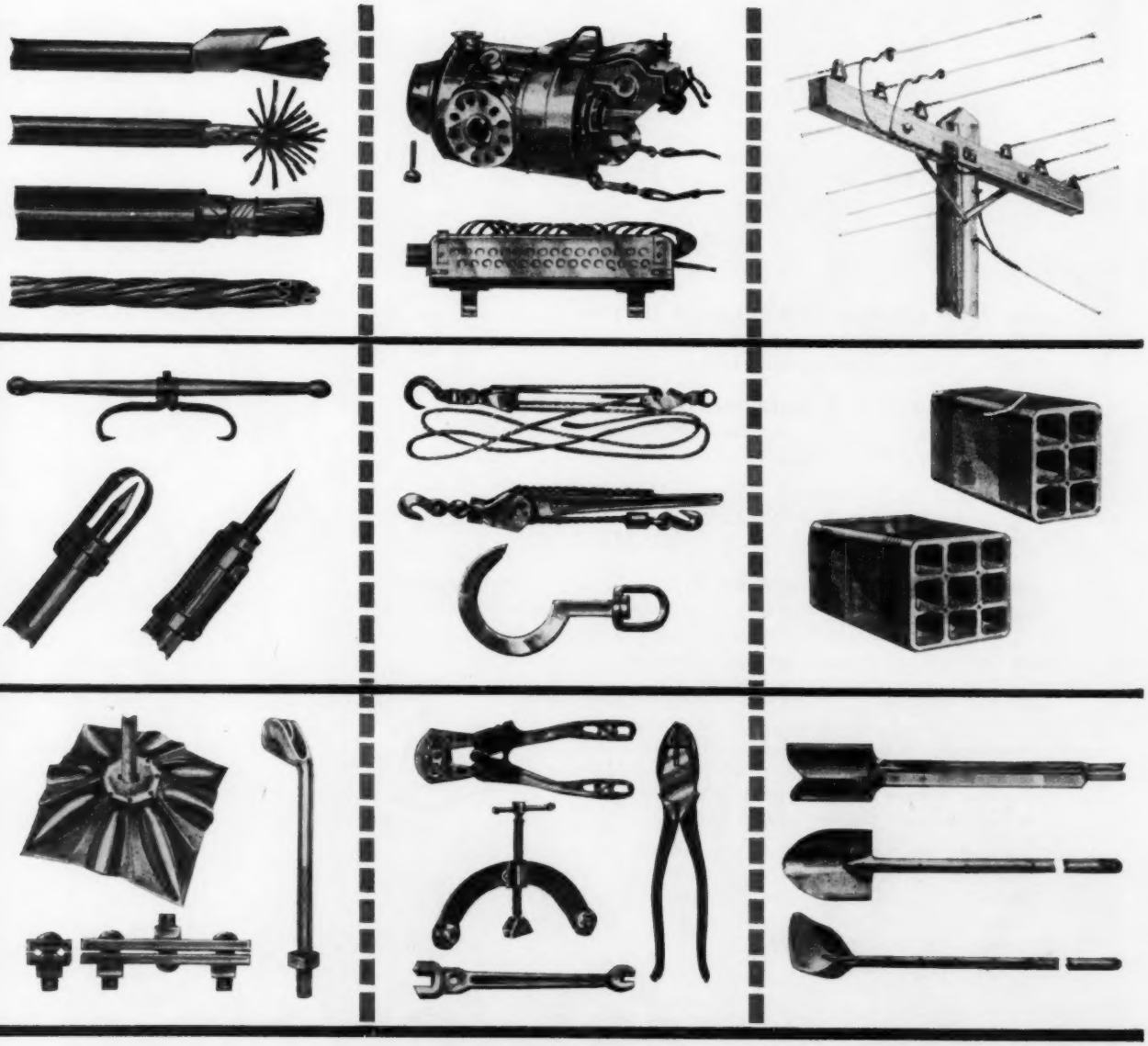

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Bell System faces three proceedings in Washington: (1) House committee looking into consent decree in anti-trust suit; (2) GSA request to FCC for 25 per cent cut in rates charged government for private line service; (3) Hearing before FCC on Wisconsin Bell's proposed purchase of Independent properties. House probe of commissions goes on. Secretary of Labor Mitchell turns down CWA request for fact-finding board to pass on bargaining.

THE MONTH of March promised to be a busy one for the Bell System in Washington, D. C. It is faced with three proceedings on two different fronts—all challenging some aspect of Bell company operations.

The first, and perhaps the most far-reaching over the long range, is the House sub-committee investigation of the 1956 consent decree between the Justice Department and the American Telephone & Telegraph Co. Under this decree filed in a federal district court in New Jersey, the federal government agreed to end a long-pending anti-trust suit seeking dissolution of the Bell System manufacturing subsidiary, the Western Electric Co.

Tentatively slated to begin Mar. 25, a sub-committee of the House Judiciary Committee, headed by Representative Celler (D., N. Y.), will seek to air complaints that the Justice Department was too easy in not requiring that Western Electric be divorced by the Bell System. The Bell System insists it has been enforcing the decree and is very willing to cooperate with the Celler sub-committee.

Former Assistant Attorney General Stanley Barnes (now a U. S. circuit court of appeals justice) testified two years ago that the Justice Department was convinced that it could not win a court suit based on complete separation of the matters. One of the matters in which the sub-committee is interested is the division of the decree requiring Bell companies, including Western Electric, to get out of the business of leasing and maintaining facilities for unregulated private communications systems. Representative Roosevelt (D., Cal.) has been riding this charge pretty hard for two years. The Federal Communications Commission still has under review proceedings by Bell System companies for filing tariffs for leasing and maintenance of mobile radio equipment as a regulated telephone company service.

The two other Washington matters involving the AT&T are before the FCC. One is a formal request by General Services Administrator Franklin Floete for an immediate 25 per cent slash in telephone rates charged the government on all "private line" service. The GSA demand runs directly contrary to the nationwide trend for increased telephone charges now pending in about half the states of the Union. The GSA is proceeding under Section 201A of the Federal Property and Administration Services Act of 1949, which authorizes it to represent the government as a consumer before the federal and state regulatory agencies in utility rate cases. There has been some criticism by state commissioners to organized GSA activity along this line. Chairman Perrine of the Illinois commission has questioned the use of congressional appropriations to finance such rate case activity.

As this writer understands Chairman Perrine's position, the latter does not question the right of the U. S. General Services Administration to appear on behalf of the federal government in a rate case in which the government's interests as a consumer are especially involved. But there has been some speculation as to whether the GSA is not embarking on a widespread or concerted program of activities in utility rate cases at the state commission level, employing consultants on behalf of GSA and otherwise contributing to the work load and the case record of state regulators.

Perhaps the congressional appropriations committee members are aware of the activity and approve. But there is surely no harm in making certain.

GSA Administrator Floete is using the AT&T's own earnings as a basis for seeking the "private line" reduction at the FCC. The administrator's argument states:

"AT&T's cost study shows that the net operating earnings from inter-exchange channel investment (for private lines) is to be 12.5 per cent for the coming year. . . . If the revenues from this service are reduced by 25 per cent, the company's net operating earnings from such services will be in line with the AT&T's 6.4 per cent net return for 1956.

"A 25 per cent reduction in telephone grade tariffs would appear to be justified on the company's own figures. During the hearing, it may well develop that certain accounting and allocation adjustments will establish that the company's earnings are actually in excess of the ones shown in its exhibits."

A third ordeal for the Bell System was due for hearings before an FCC examiner later this month in the case of a proposed Bell acquisition of Independent telephone properties at Menomonee Falls and Lisbon, Wis. The Wisconsin Telephone Co. (Bell) had proposed the purchase of these properties. But intervention has been made on behalf of the United States Independent Telephone Association, with the objection that the proposed purchase price is too high and that another Independent telephone company is ready, willing, and able to buy.

This case has revived interest in the somewhat dormant subject of Bell acquisition of Independent properties in recent years. A new question has been raised as to whether the Bell System has enlarged the reasons or broadened the conditions which would justify such Bell purchase of Independent property. The new factors mentioned include: (1) Community of interest cases and (2) cases in which there is feasibility of integration. These terms, like the words "reasonable rates" or "fair value," do not mean very much in the absence of precise definition.

Like that rubber band provision in the federal Constitution, "public welfare," such vague phrases can be stretched to cover a multitude of things, both desirable and undesirable. As the peppery little U. S. Senator from Virginia, the late Carter Glass, once said during a debate on the "public welfare" clause of the Constitution. "I think there are some people who could be hung under that provision."

House Probe Goes On

Commissioner Mack of the FCC is gone but not forgotten as far as the House Sub-committee on Legislative Oversight is concerned. The resignation of the Florida commissioner is not expected to bring any early end to the investigation of regulatory commission practices even on the FCC angle. But the future handling of the sub-committee's work by its new counsel, Robert W. Lishman, is expected to be more moderate than was the case when the probe was in the hands of his predecessor, the stormy New York University law professor, Dr. Edward Schwartz.

Lishman is a 54-year-old Washington lawyer. A partner of a well-known and respected legal firm, which has been active in railroad matters, among other things, Lishman has appeared before the Interstate Commerce Commission and the Civil Aeronautics Administration. He has not been active before the Federal Communications Commission.

Probably to take some edge off of the speculation that he might follow in the somewhat erratic footsteps of Dr. Schwartz, Lishman commented that he would keep any differences he might have with the sub-committee members within the four walls of the committee room. In addition to the controversial TV channel 10 case in Miami, the sub-committee still has some criticism of FCC practices to be aired, and there are other commissioners to be called on the carpet. The case of Commissioner Mack, however, was believed to constitute the most serious item on the sub-committee's agenda — especially since it now appears that the U. S. senators are not going to be called or invited to testify.

Chairman Harris (D., Ark.) of the House sub-committee, who has pursued the Mack case relentlessly, is still not going to let Federal Power Commission members be unfairly accused of undue sympathy for the regulated gas industry. There is emerging fairly definite sentiment for legislation to establish ethical safeguards against outside pressure from any source on the regulatory commissions. Chairman Harris is also going to ask for legislation that would clarify grounds for dismissal of commissioners for cause. This situation was more or less left up in the air by the Humphreys decision by the Supreme court. That old 1934 decision simply held that a member of a regulatory commission could not be dismissed for policy or political reasons, even by the President of the United States.

On the other side of Capitol Hill, Attorney General William Rogers told the Senate Sub-committee on Constitutional Rights that members of the independent regulatory commissions of the federal government have a right to keep certain matters confidential, notwithstanding congressional requests for disclosure. The Attorney General was referring to efforts of some congressional committee members to question regulatory commissioners and their staffs about cases before such commissions for deliberation and communications in the commissions' files regarding such cases.

Rogers said that independent federal regulatory agencies sometimes have as much right as the President of the United States to withhold information from Congress. He admitted that no one can tell just how much information Congress has a right to demand of such an agency without considering a specific case. But he added: "It should not be forgotten that the more frequent and the more extensive the congressional inquiries made of the independent agencies, the less free and truly independent those regulatory agencies will become."

Rogers testified before a sub-committee headed by Senator Hennings (D., Mo.) which is considering legislation in this field. Rogers said the entire subject is governed by the composition of the government as "three equal and coordinate branches," no one of which shall encroach upon another." He said he deplores the "overemphasis on secrecy" in discussing the availability of information because it "creates the idea in the public mind that information is being withheld." He does not believe this is the case.

A Broadway Paul Revere

Peter Bucky may go down in history as a man who got a traffic ticket for using a telephone while on an emergency mission. Peter Bucky is the head of the International Medical Research Corp. of New York City and his business is supplying X-Ray therapy machines for hospitals. When these machines break down or when there is any other emergency in connection with their use, the hospitals want to get hold of Peter Bucky in a hurry. For that reason Peter Bucky has put a telephone in his car so that he will be constantly at the disposal of his hospital clients.

Late last month, while driving up Broadway in New York City, Mr. Bucky's automobile telephone rang or buzzed. He answered and told the party to wait until he could pull over to the curb. But an alert traffic policeman was there to give Peter Bucky a ticket. The ticket said there was a violation of Article 3, Section 52, of the city's traffic regulations, which says that it is an offense to receive or transmit messages in a vehicle equipped for radio-telephone service while the vehicle is in motion and the driver of the car is alone.

Mr. Bucky does not think he has violated the law by taking a telephone call over his automobile telephone. He referred to radio squad car patrolmen, bus drivers making change, taxicab drivers who receive or call dispatchers, or private automobile operators who open windows, light cigarettes, or hug their girl friends while their cars are in motion. And, what about those people who you see driving along singing accompaniment to music they are receiving over their car radios? What is the difference?

The New York Telephone Co., which services Mr. Bucky's car, has taken no position in the matter, for obvious reasons. A New York court will have to decide this. But, according to the New York City police department, Paul Revere should have "stood in bed" unless he was willing to pull his horse to the curb before engaging in any conversation with the Minutemen.

Mitchell Passes Up CWA Bid

From his office in Washington, D. C., Secretary of Labor Mitchell, on Mar. 3, rejected a labor leader's request that he appoint a fact-finding board to pass on bargaining demands of the Communications Workers of America. In a letter to CWA President Joseph A. Beirne, who suggested the board,

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Departmental and group meetings should be regularly scheduled and carefully planned so as to provide depth and breadth of content.

The Supervisor as a Morale Builder

By JOHN C. GREIDER*

YOU CAN buy a person's presence for a certain number of hours a day, but creative work and achievement depends upon many factors other than salary.

If an employe is provided with enthusiasm, confidence, inspiration, and recognition of success, he is more likely to work up to his maximum possibilities. Such factors are spoken of as morale.

The telephone company supervisor's feelings, attitudes, and actions should reflect at all times his understanding of and belief in the importance of the individual and the work he performs. Employes do not want to be organizational men in grey flannel suits. They want to be respected as individuals, they want to voice their opinion, they want to be heard on issues that affect their job welfare.

As business management loses its character of being an intuitive art and becomes an increasingly disciplined science, morale becomes an important factor in efficient, economical, and profitable production. The supervisor should have the ability to recognize an opportunity to improve morale, to seize the opportunity and make the best of it. Too often an employe is measured by the percentage of financial gain or economic return he makes for a company, rather than by the experience, and knowledge he contributes to the over-all operation of the organization.

The supervisor needs to recognize the basic needs most employes have: (1) The need to be accepted and appreciated; (2) the need to feel successful; (3) the fullest development of the individual.

*Mr. Greider is Information Assistant for the Southern Bell Telephone & Telegraph Co. at Atlanta, Ga.

J. C. GREIDER

To Be Accepted and Appreciated

Every employe needs to feel that his supervisor likes him, has confidence in him, and respect for him personally and for his job. Employes expect their supervisors to be honest with them at all times, to give honest answers when asked questions and to possess the integrity to stand back of an employe when the need arises. Not only must the supervisor believe in the golden rule, he must practice it. The supervisor must have respect for and confidence in his employes if he is to express with sincerity his acceptance and appreciation of each employe.

Through the many contacts that occur in the regular working day, frequent talks and casual meetings, the supervisor can convey his feeling of acceptance and appreciation to his employes.

A feeling of acceptance and appreciation also is gained by employes being able to participate in the planning and decision making programs. The enlist-

ment of all talents, participation in the planning by those who will have to carry out the programs or decisions made, will greatly aid morale in any organization. Deification of group thinking is a step toward mediocrity and conformity. Flexibility, both in company policy and in personnel management, together with new ideas and approaches to problems, will contribute to the successful operation of any telephone company.

Providing time for personal conferences and a program of development for the individual and the department will help create an atmosphere of success.

Need to Feel Successful

When an employe feels his supervisor regards him as incompetent, when the feeling of achievement is below one's ability, the employe may become aggressive, uncooperative, depressed, and intolerant.

Evidences of success should be discovered by the supervisor. Providing time for personal conferences and a program of development for the individual and the department will help create an atmosphere of success. Graphically illustrated charts and records of achievements also help the employe to set realistic goals in his work and thus establish a level of aspiration for success that he can reach. A totally impossible standard to reach is as mythical as William Faulkner's Yoknapatawpha County.

There are two types of telephone supervisors to whom we have reason to be grateful. There are those who teach us about our job, who introduce us in a methodical way to its functions and operations, lay solid foundations, raise the tower of experience, foursquare and firmly build.

But there is another type, a rarer type, to whom we owe more still, those supervisors who have an attitude towards their work, an outlook on their job that we have not met before and whose vision is undimmed through years of service and stature not dwarfed by the magnitude of responsibility. This is the most valuable supervisor one can ever have.

Fullest Development

Telephone employes want to be successful in their endeavors. They want to understand more clearly how to improve themselves and their jobs. Unless the supervisor can accept these assumptions about his employes, the growth and improvement of his staff is sure to be limited.

Morale may be fairly good in an organization that does not have a sound employe training program, providing there prevails an atmosphere of praise and approval, and if they are unaware that the program is less effective than it should be.

A better type of morale will result from supervisors understanding what research has discovered about the training of employes and by putting these practices into effect in their own organization.

Employes should be stimulated and inspired to search for information about the telephone company and to improve existing methods and practices when feasible. Mediocrity in work or thinking should not be allowed to calcify into dogma. Departmental and group meetings should be regularly scheduled and carefully planned so as to provide depth and breadth of content. Poorly organized meetings and unplanned programs break morale in an organization more quickly than the haste required to gather the employes.

Better acceptance and understanding of each other can come only as people get to know each other. Dinner meetings, parties and noon luncheons help employes and supervisors learn to know and accept each other, especially in larger organizations.

Finally, the supervisor's role in morale building is heavily dependent upon his genuine and sincere respect for, and acceptance of, each employe under his authority. His friendly per-

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The supervisor's friendly personality and warmth of emotion, his insight into and understanding of human nature, together with his own experience and competence, are strong contributing factors to establishing high employe morale.

Outside PLANT Fundamental PLANNING

If something is to be constructed at once or if additions or extensions are to be made from time to time plans are required.

By JOHN GRANT

IF SOMETHING is to be constructed at once, a plan is required. If something is to be constructed and additions or extensions are to be made from time to time, a plan is still required. In the second instance, the plan may be more necessary than if the item be built completely at once and no more additions made thereafter.

This second situation applies to the telephone business, where additions and extensions have to be made to outside plant as new real estate subdivisions are developed. If no plan were available, the consequences would be an aimless extension of plant in a rather haphazard design, inefficient, and costing more than it should for the results obtained.

In order to direct the proper construction of the individual extension, a long-range plan, a fundamental plan, is required to keep the building efforts properly oriented. Such is the reason for the "Outside Plant Fundamental Plan." It shows where the additions or extensions should be made to produce an economical, orderly, and efficient arrangement of feeder cable routes. This applies, regardless of the size of the exchange.

Formerly, consideration was given only to underground conduit routes by the fundamental plan, but it is believed today that an equal amount of planning is justified to properly locate large aerial feeder cable systems also. Large groups of telephone users are served by feeder cables, which usually provide central office connections to the distribution system of wire or small cables. The type of supporting structure of the feeder cables, whether poles or underground conduit, usually has little to do with the route or location, except under uncommon conditions.

So, then, the fundamental plan today is concerned with properly routing cables, aerial or underground, to serve large areas. Underground conduit or buried cable should be considered only when aerial routes are not possible or are no longer available. Taking into account only the routes for large feeder cables, the fundamental plan is interested principally in urban areas rather than rural, for it is only in built up areas or growing areas that large feeder cables are required.

In preparing a fundamental plan for an exchange area, a number of items must be taken into consideration, such as:

(1) Geographical arrangement of streets.
(2) Location of accessible portions of city blocks.
(3) Heavy traffic routes.
(4) Topography.
(5) Existing feeder routes, particularly underground conduit.
(6) Future central office locations.
(7) Future area cuts.
(8) Public and municipal reaction.
(9) Economics.

The feeder cable system must start at the central office, generally as underground conduit, if any number of large cables are involved, and extend out into the central office area first along the intersecting streets nearest the building. The base route parallels the longer dimension of the city blocks. As the short dimension of the blocks usually includes the alley or easement entrances, or the ends of rear lot lines, when distribution occurs from the interior of the blocks, branch feeder cable routes extend to either side at right angles to the base route. Subsidiary base lines may be introduced into the plan when advantageous and should be designed to serve their own branch feeder routes. The fundamental plan includes branch feeder routes, but does not extend into the distribution system serving only one, or at most a few, blocks. All feeder routes are expected to take advantage of slanting streets. An ideal plan would be to have small branch feeders along every other street. This arrangement allows the use of small aerial feeders, which will not require expensive underground conduit, and as only one city block would be served on each side of the branch feeder route, distributing cables with their expensive terminals and splicing are largely eliminated. This ideal condition is not always possible due to the arrangement of streets, alleys, rear lot lines, or to the timing of housing developments in the area.

It is expected that backfeeds will occur on distributing cables when placed, but these are usually relatively short, of small-sized cables, and would seldom, if ever, permit smaller distributing cables, if the backfeed was not formed. However, backfeeds on feeder cables should be avoided whenever possible. These cables are larger and more expensive, and any backfeed on them is a more serious matter.

Streets carrying heavy traffic should be avoided as feeder routes of the fundamental plan. A smaller feeder system should be planned along the first parallel street on either side of the heavy traffic artery. This accomplishes the following results:

(1) Eliminates dangerous and time-consuming working conditions among moving vehicles, parked cars, and curious pedestrians for all time, both now and in the future. In some cities, the police department insists upon work in such locations being done at night, which generally requires differential wage or overtime payments.

(2) Makes the distribution system serving the residential areas, and the rear of businesses facing the heavy traffic route, more accessible to the feeder cables.

Fig. 1

Fig. 2

(3) Eliminates the necessity for "T" construction with its expensive guying, anchoring, and/or self-supported poles.

(4) A feeder route on a heavy traffic street always requires underground conduit due to physical limitations of aerial construction or to municipal regulations. If the cable requirement is divided between the paralleling streets, the reduced numbers of cables on each street can often be supported on poles for years, if not indefinitely, thus postponing or removing completely the requirement of expensive conduit.

It becomes difficult to justify economically a feeder route along a street, one or both sides of which are occupied by parks, cemeteries, golf courses, or other conditions which use large tracts of land, offer no opportunity for telephone development, and cut off access to contiguous areas. In such cases, the area beyond may be served by an extension of a paralleling route at the nearer side rather than by a route passing through the affected locality.

Long, steep declivities, lakes, rivers, etc., also affect fundamental plans. Less direct routes may have to be used, except in the case of lakes and rivers, when submarine cables may be justified as a means of extending the feeder, or a deviation may be advantageous to make use of a bridge crossing.

In laying out a fundamental plan, cognizance must be taken of existing feeder routes. Existing aerial routes may be incorporated within the plan, if it becomes economically and physically advantageous to maintain this path. Existing aerial routes which do not lend themselves to the fundamental plan may continue in service, but should not be perpetuated and augmented by the addition of future feeder cables. Existing underground conduit in an undesirable location is oftentimes more difficult to eliminate from the fundamental plan until the time comes when it needs reinforcement, which may then be done along the optimum route. However, the existing duct route should be incorporated into the plan, whenever it is economical to do so.

All fundamental plan routes are shown on a map of the area, with appropriate markings for proposed aerial or underground plant and for existing underground conduit. Existing aerial feeder routes not conforming to the plan are not shown on the map. Fundamental plans should also take into account future central office locations and future area cuts, so that appropriate routes under these conditions will be established with a minimum of rearrangement or loss. When the time comes that the final location of the new central office is chosen and the area boundaries are definitely established, a review of routes for the area should be made, particularly in cases where the final site of the new office differs from an earlier tentative location.

Fig. 1 indicates a map of part of a town or small city, whose main cable routes are indicated by the broken lines. Too typical are the routes on Main Street and Principal Street, which represent heavy traffic arteries into and through the city. Near the City Hall, the cables may be in underground conduit because of the business area in which they are located. Several blocks away, however, the plant is probably aerial, the poles supporting both feeder and distribution facilities. In either section of these thoroughfares, there is always the likelihood of conflict with traffic, both vehicular and pedestrian, whenever it is necessary to perform work in the manholes or on the poles. As vehicular traffic increases, the curbs are frequently cut back in areas away from the business intersection, thus reducing or eliminating the parkway between the sidewalk and the curb. Almost invariably this street widening calls for an unrecompensed, expensive plant arrangement.

It will be noted the feeder routes

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Economic Selection Studies

By JOHN D. DRESSER

Part 2

2. 323 *DEPRECIATION.* As soon as something is built, it immediately begins to deteriorate or depreciate. Depreciation applies to all items except land. Some of the causes of depreciation are:

(1) Wear and tear.
(2) Weather and rot.
(3) Obsolescence.
(4) Damage from storms and accidents.
(5) Inadequacy.
(6) The necessity for removal due to public improvements or requirements.

Almost all industries have a depreciation fund into which allotments are assigned from income at stated intervals. Theoretically, this fund is to pay for the depreciated portion of all items of plant. In dollars and cents, this amount is equal to the first cost of the item plus the cost of its removal minus the gross salvage. This is called the Lump Sum Depreciation (LSD).

Gross salvage is the money obtained for the item when it is sold or otherwise retired. The gross salvage should pay for the cost of removal. After the cost of removal has been deducted from the gross salvage, the remainder is called *net salvage.* If the gross salvage is smaller than the cost of removal, as sometimes happens, then the net salvage may be negative, i.e., the net salvage is an expense instead of an income or savings.

Lump Sum Depreciation, then, may be defined as first cost plus cost of removal minus gross salvage, or as first cost minus net salvage. It is equivalent to the so-called charge to depreciation reserve.

During the time an item exists, allotments are assigned to the depreciation fund, as mentioned previously. These allotments may be made monthly, semi-annually, annually, or at some other interval. Whatever the interval, for purposes of Economic Selection Studies the allotments are treated on an annual basis. Other studies determine the expected average service life of various classes or types of plant or equipment. If the Lump Sum Depreciation can be predicted, the average depreciation per year can then be determined. This form of depreciation is called *Straight Line Depreciation,* and is of some concern to accounting and bookkeeping people.

Therefore, each year a definite

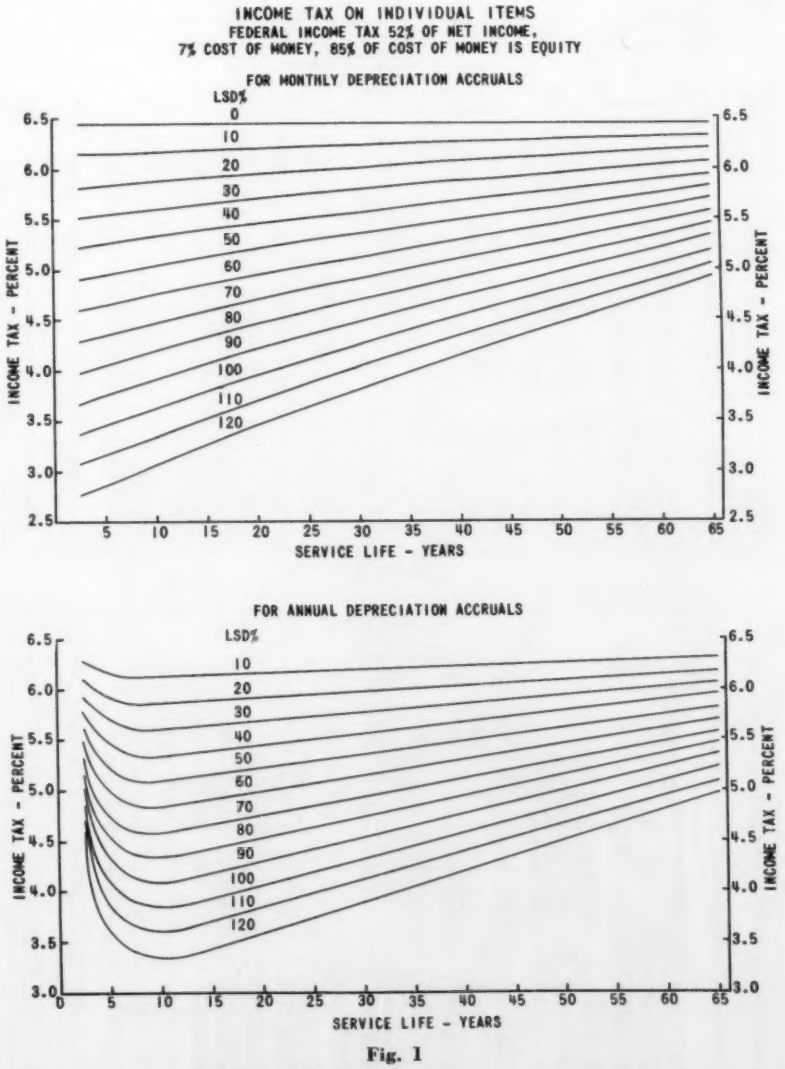

Fig. 1

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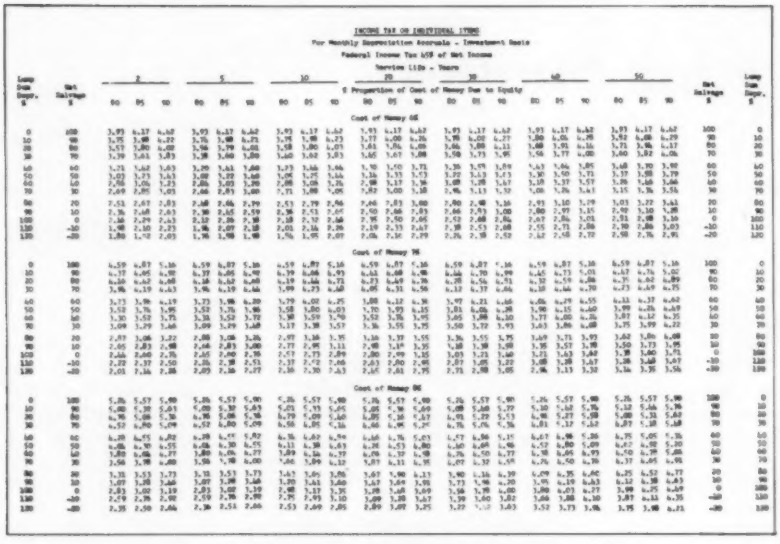


INCOME TAX ON INDIVIDUAL ITEMS

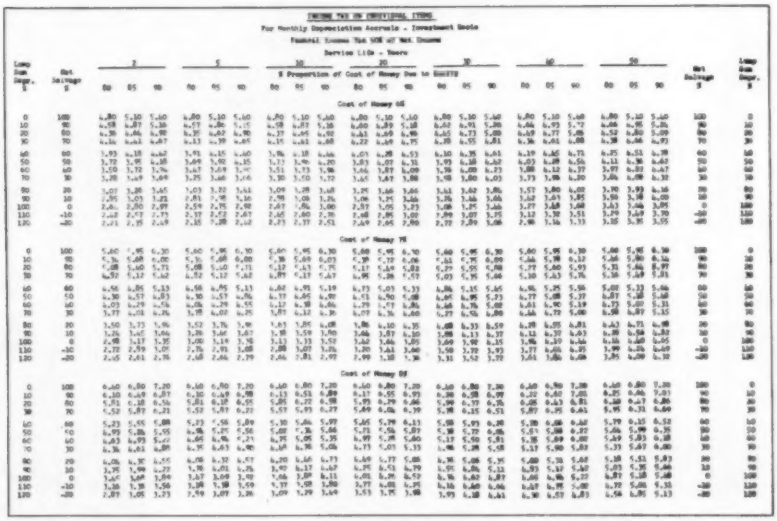
For Monthly Depreciation Accruals - Investment Basis

Federal Income Tax 50% of Net Income

Service Life - Years

Long Tax Depr.	Net Salvage	2			5			10			20			30			40			50			Net Salvage	Long Tax Depr.
											% Proportion of Cost of Money Due to Equity													
		60	65	70	60	65	70	60	65	70	60	65	70	60	65	70	60	65	70	60	65	70		
		Cost of Money 05																						
0	100	3.93	4.17	4.42	3.93	4.17	4.42	3.93	4.17	4.42	3.93	4.17	4.42	3.93	4.17	4.42	3.93	4.17	4.42	3.93	4.17	4.42	100	0
10	90	3.75	3.98	4.22	3.75	3.98	4.21	3.75	3.98	4.21	3.77	4.00	4.24	3.78	4.00	4.24	3.80	4.04	4.28	3.82	4.06	4.29	90	10
20	80	3.57	3.80	4.03	3.56	3.79	4.02	3.58	3.80	4.03	3.61	3.84	4.08	3.64	3.88	4.11	3.68	3.91	4.16	3.71	3.94	4.17	80	20
30	70	3.39	3.61	3.83	3.38	3.60	3.82	3.40	3.62	3.83	3.45	3.67	3.88	3.50	3.73	3.95	3.55	3.79	4.02	3.60	3.83	4.06	70	30
40	60	3.21	3.42	3.63	3.20	3.41	3.62	3.23	3.44	3.64	3.30	3.51	3.73	3.36	3.59	3.80	3.43	3.66	3.89	3.48	3.70	3.92	60	40
50	50	3.02	3.23	3.43	3.02	3.22	3.42	3.05	3.25	3.44	3.14	3.33	3.53	3.22	3.43	3.63	3.30	3.50	3.71	3.37	3.58	3.79	50	50
60	40	2.84	3.04	3.23	2.85	3.03	3.22	2.88	3.06	3.25	2.98	3.17	3.37	3.08	3.27	3.47	3.18	3.37	3.57	3.26	3.46	3.66	40	60
70	30	2.66	2.85	3.03	2.66	2.83	3.02	2.71	2.88	3.05	2.82	3.00	3.18	2.91	3.10	3.29	3.01	3.24	3.41	3.15	3.34	3.54	30	70
80	20	2.51	2.67	2.83	2.48	2.64	2.79	2.53	2.70	2.86	2.66	2.83	3.00	2.80	2.98	3.16	2.93	3.10	3.29	3.03	3.22	3.41	20	80
90	10	2.34	2.48	2.63	2.30	2.45	2.59	2.34	2.51	2.67	2.50	2.66	2.83	2.64	2.81	3.00	2.80	2.97	3.17	2.90	3.10	3.30	10	90
100	0	2.16	2.29	2.43	2.12	2.26	2.38	2.16	2.32	2.48	2.35	2.50	2.65	2.47	2.64	2.82	2.67	2.84	3.03	2.91	3.08	3.26	0	100
110	-10	1.98	2.10	2.23	1.94	2.07	2.18	1.98	2.13	2.28	2.19	2.33	2.47	2.30	2.46	2.63	2.49	2.65	2.84	2.70	2.86	3.03	-10	110
120	-20	1.80	1.92	2.03	1.76	1.88	1.98	1.79	1.95	2.09	2.04	2.16	2.29	2.14	2.28	2.43	2.32	2.46	2.62	2.52	2.66	2.81	-20	120
		Cost of Money 06																						
0	100	4.59	4.87	5.16	4.59	4.87	5.16	4.59	4.87	5.16	4.59	4.87	5.16	4.59	4.87	5.16	4.59	4.87	5.16	4.59	4.87	5.16	100	0
10	90	4.37	4.64	4.92	4.37	4.64	4.92	4.39	4.66	4.93	4.41	4.68	4.96	4.44	4.70	4.99	4.45	4.73	5.01	4.47	4.75	5.02	90	10
20	80	4.16	4.41	4.68	4.16	4.42	4.68	4.19	4.45	4.71	4.24	4.50	4.77	4.29	4.55	4.82	4.32	4.59	4.86	4.35	4.62	4.89	80	20
30	70	3.94	4.19	4.43	3.94	4.19	4.44	3.99	4.23	4.48	4.06	4.31	4.56	4.12	4.37	4.64	4.18	4.44	4.70	4.23	4.49	4.75	70	30
40	60	3.73	3.96	4.19	3.73	3.96	4.20	3.79	4.02	4.25	3.88	4.12	4.36	3.97	4.21	4.46	4.04	4.29	4.55	4.11	4.37	4.62	60	40
50	50	3.52	3.74	3.96	3.52	3.74	3.96	3.59	3.81	4.03	3.71	3.94	4.17	3.81	4.05	4.29	3.90	4.15	4.40	3.97	4.22	4.47	50	50
60	40	3.30	3.52	3.75	3.31	3.52	3.73	3.38	3.59	3.79	3.52	3.74	3.95	3.65	3.88	4.10	3.77	4.00	4.24	3.83	4.07	4.31	40	60
70	30	3.09	3.29	3.48	3.09	3.29	3.48	3.17	3.36	3.55	3.33	3.53	3.73	3.45	3.66	3.87	3.57	3.79	4.01	3.69	3.91	4.14	30	70
80	20	2.87	3.06	3.22	2.88	3.05	3.21	2.97	3.16	3.33	3.15	3.34	3.52	3.26	3.45	3.65	3.40	3.61	3.82	3.52	3.74	3.98	20	80
90	10	2.65	2.83	2.98	2.66	2.83	3.00	2.77	2.95	3.11	2.98	3.16	3.35	3.10	3.30	3.50	3.25	3.47	3.68	3.36	3.57	3.80	10	90
100	0	2.44	2.60	2.75	2.45	2.61	2.76	2.57	2.73	2.89	2.81	2.98	3.15	2.93	3.13	3.32	3.09	3.30	3.51	3.21	3.43	3.64	0	100
110	-10	2.22	2.37	2.51	2.25	2.38	2.52	2.37	2.52	2.66	2.63	2.80	2.95	2.77	2.95	3.13	2.93	3.12	3.32	3.06	3.28	3.47	-10	110
120	-20	2.01	2.14	2.28	2.03	2.16	2.27	2.16	2.30	2.43	2.45	2.61	2.75	2.61	2.78	2.95	2.76	2.93	3.12	2.90	3.11	3.30	-20	120
		Cost of Money 07																						
0	100	5.26	5.57	5.89	5.26	5.57	5.90	5.26	5.57	5.89	5.26	5.57	5.89	5.26	5.57	5.90	5.26	5.57	5.90	5.26	5.57	5.90	100	0
10	90	5.00	5.30	5.61	5.00	5.30	5.62	5.03	5.33	5.64	5.06	5.36	5.67	5.08	5.39	5.71	5.10	5.42	5.74	5.12	5.44	5.76	90	10
20	80	4.76	5.04	5.34	4.76	5.04	5.34	4.79	5.09	5.40	5.05	5.36	5.67	5.11	5.42	5.73	5.16	5.47	5.80	5.20	5.51	5.83	80	20
30	70	4.52	4.80	5.09	4.52	4.80	5.09	4.56	4.85	5.14	4.84	5.14	5.45	4.91	5.21	5.52	4.97	5.27	5.59	5.01	5.32	5.64	70	30
40	60	4.28	4.55	4.82	4.28	4.55	4.82	4.34	4.61	4.89	4.63	4.92	5.21	4.71	5.00	5.31	4.77	5.06	5.36	4.81	5.11	5.41	60	40
50	50	4.04	4.30	4.55	4.04	4.30	4.55	4.11	4.38	4.63	4.42	4.70	4.98	4.52	4.80	5.09	4.57	4.86	5.15	4.62	4.92	5.20	50	50
60	40	3.80	4.04	4.27	3.80	4.04	4.27	3.89	4.14	4.37	4.19	4.47	4.74	4.32	4.60	4.87	4.36	4.65	4.93	4.42	4.70	4.98	40	60
70	30	3.56	3.78	4.00	3.56	3.78	4.00	3.65	3.88	4.10	3.96	4.21	4.45	4.09	4.35	4.60	4.15	4.41	4.67	4.21	4.47	4.73	30	70
80	20	3.31	3.53	3.73	3.31	3.53	3.73	3.43	3.65	3.86	3.67	3.90	4.13	3.90	4.16	4.39	4.09	4.35	4.62	4.25	4.52	4.77	20	80
90	10	3.07	3.28	3.48	3.07	3.28	3.48	3.20	3.41	3.60	3.43	3.64	3.85	3.73	3.98	4.20	3.95	4.19	4.43	4.12	4.38	4.63	10	90
100	0	2.81	3.00	3.18	2.83	3.02	3.19	2.98	3.16	3.34	3.20	3.40	3.59	3.56	3.80	4.03	3.80	4.03	4.27	3.99	4.25	4.51	0	100
110	-10	2.59	2.76	2.92	2.59	2.76	2.92	2.75	2.93	3.10	3.00	3.20	3.39	3.39	3.62	3.84	3.66	3.88	4.10	3.87	4.11	4.35	-10	110
120	-20	2.35	2.50	2.64	2.36	2.51	2.66	2.53	2.69	2.85	2.89	3.07	3.25	3.22	3.43	3.63	3.52	3.73	3.95	3.75	3.98	4.21	-20	120

Table 2



INCOME TAX ON INDIVIDUAL ITEMS

For Monthly Depreciation Accruals - Investment Basis

Federal Income Tax 50% of Net Income

Service Life - Years

Long Tax Depr.	Net Salvage	2			5			10			20			30			40			50			Net Salvage	Long Tax Depr.
											% Proportion of Cost of Money Due to Equity													
		60	65	70	60	65	70	60	65	70	60	65	70	60	65	70	60	65	70	60	65	70		
		Cost of Money 05																						
0	100	5.86	6.23	6.60	5.86	6.23	6.60	5.86	6.23	6.60	5.86	6.23	6.60	5.86	6.23	6.60	5.86	6.23	6.60	5.86	6.23	6.60	100	0
10	90	5.59	5.95	6.30	5.59	5.95	6.29	5.60	5.95	6.31	5.63	5.98	6.34	5.65	6.01	6.37	5.68	6.03	6.39	5.70	6.06	6.41	90	10
20	80	5.33	5.67	6.00	5.32	5.67	5.99	5.34	5.68	6.02	5.39	5.73	6.07	5.44	5.79	6.13	5.49	5.83	6.18	5.53	5.88	6.22	80	20
30	70	5.07	5.39	5.71	5.06	5.38	5.70	5.08	5.40	5.72	5.15	5.47	5.79	5.23	5.56	5.89	5.30	5.63	5.96	5.37	5.71	6.04	70	30
40	60	4.80	5.11	5.41	4.79	5.10	5.41	4.82	5.13	5.43	4.92	5.23	5.54	5.02	5.34	5.66	5.12	5.43	5.75	5.20	5.52	5.85	60	40
50	50	4.53	4.82	5.11	4.52	4.81	5.11	4.56	4.85	5.14	4.69	4.98	5.27	4.81	5.12	5.42	4.92	5.23	5.54	5.01	5.34	5.66	50	50
60	40	4.27	4.54	4.82	4.26	4.53	4.81	4.30	4.58	4.86	4.46	4.75	5.04	4.60	4.90	5.21	4.73	5.04	5.35	4.82	5.14	5.46	40	60
70	30	4.01	4.26	4.52	3.99	4.23	4.49	4.04	4.30	4.55	4.23	4.50	4.76	4.39	4.67	4.96	4.54	4.84	5.13	4.70	4.99	5.28	30	70
80	20	3.75	3.98	4.22	3.71	3.95	4.19	3.78	4.03	4.28	4.00	4.26	4.52	4.15	4.42	4.69	4.29	4.57	4.85	4.43	4.73	5.03	20	80
90	10	3.49	3.70	3.93	3.44	3.66	3.88	3.52	3.75	3.98	3.73	3.97	4.22	3.86	4.11	4.37	4.00	4.26	4.53	4.16	4.43	4.72	10	90
100	0	3.22	3.42	3.62	3.17	3.38	3.58	3.26	3.47	3.67	3.45	3.67	3.89	3.58	3.81	4.05	3.72	3.96	4.21	3.90	4.15	4.41	0	100
110	-10	2.96	3.14	3.32	2.91	3.09	3.27	3.00	3.19	3.37	3.18	3.38	3.58	3.30	3.51	3.73	3.43	3.65	3.89	3.59	3.82	4.07	-10	110
120	-20	2.69	2.86	3.02	2.63	2.80	2.96	2.74	2.92	3.09	2.91	3.11	3.32	3.03	3.24	3.46	3.15	3.37	3.60	3.28	3.50	3.74	-20	120
		Cost of Money 07																						
0	100	6.91	7.28	7.70	6.91	7.28	7.70	6.91	7.28	7.70	6.91	7.28	7.70	6.91	7.28	7.70	6.91	7.28	7.70	6.91	7.28	7.70	100	0
10	90	6.63	6.96	7.35	6.63	6.96	7.35	6.65	6.97	7.36	6.69	7.00	7.40	6.62	7.03	7.44	6.65	7.08	7.48	6.67	7.09	7.50	90	10
20	80	6.34	6.65	7.00	6.33	6.64	6.99	6.34	6.65	7.00	6.47	6.78	7.13	6.53	6.85	7.21	6.63	6.93	7.29	6.68	6.98	7.34	80	20
30	70	6.04	6.35	6.67	6.04	6.34	6.66	6.05	6.35	6.66	6.16	6.46	6.77	6.23	6.53	6.85	6.31	6.61	6.93	6.37	6.67	7.00	70	30
40	60	5.73	6.02	6.32	5.72	6.02	6.32	5.75	6.03	6.33	5.85	6.14	6.44	5.93	6.23	6.54	6.02	6.32	6.63	6.12	6.42	6.73	60	40
50	50	5.43	5.70	5.98	5.42	5.69	5.97	5.45	5.72	6.00	5.54	5.81	6.09	5.63	5.91	6.20	5.71	6.00	6.29	5.80	6.09	6.39	50	50
60	40	5.12	5.38	5.64	5.11	5.37	5.63	5.14	5.40	5.66	5.23	5.49	5.75	5.33	5.60	5.87	5.41	5.68	5.96	5.49	5.77	6.05	40	60
70	30	4.82	5.06	5.31	4.80	5.04	5.29	4.83	5.07	5.32	4.92	5.16	5.41	5.02	5.27	5.53	5.10	5.36	5.62	5.18	5.45	5.72	30	70
80	20	4.51	4.74	4.98	4.49	4.72	4.96	4.52	4.75	4.99	4.61	4.85	5.09	4.71	4.95	5.20	4.79	5.04	5.29	4.86	5.11	5.37	20	80
90	10	4.20	4.41	4.63	4.18	4.39	4.61	4.20	4.41	4.63	4.30	4.52	4.74	4.39	4.61	4.84	4.46	4.69	4.92	4.53	4.76	5.00	10	90
100	0	3.88	4.08	4.28	3.86	4.06	4.26	3.89	4.09	4.29	4.00	4.20	4.41	4.08	4.29	4.50	4.14	4.35	4.57	4.20	4.42	4.64	0	100
110	-10	3.56	3.73	3.91	3.53	3.71	3.89	3.57	3.75	3.93	3.69	3.88	4.07	3.77	3.97	4.17	3.82	4.02	4.23	3.87	4.08	4.29	-10	110
120	-20	3.23	3.39	3.57	3.20	3.37	3.54	3.25	3.43	3.61	3.38	3.57	3.76	3.46	3.66	3.86	3.51	3.72	3.93	3.56	3.77	3.98	-20	120
		Cost of Money 08																						
0	100	7.82	8.21	8.60	7.82	8.21	8.60	7.82	8.21	8.60	7.82	8.21	8.60	7.82	8.21	8.60	7.82	8.21	8.60	7.82	8.21	8.60	100	0
10	90	7.50	7.87	8.25	7.50	7.87	8.25	7.52	7.89	8.27	7.56	7.93	8.31	7.59	7.96	8.34	7.62	8.00	8.38	7.64	8.02	8.41	90	10
20	80	7.18	7.53	7.89	7.17	7.53	7.89	7.21	7.56	7.92	7.28	7.64	8.01	7.32	7.72	8.09	7.39	7.80	8.18	7.45	7.86	8.24	80	20
30	70	6.86	7.19	7.54	6.85	7.19	7.54	6.88	7.22	7.57	7.00	7.35	7.71	7.07	7.43	7.80	7.09	7.46	7.83	7.27	7.73	8.12	70	30
40	60	6.54	6.86	7.19	6.53	6.85	7.18	6.56	6.88	7.21	6.67	6.99	7.33	6.74	7.08	7.43	6.76	7.10	7.46	6.80	7.13	7.48	60	40
50	50	6.23	6.53	6.84	6.21	6.52	6.83	6.24	6.55	6.86	6.33	6.64	6.96	6.41	6.73	7.06	6.43	6.75	7.08	6.46	6.78	7.11	50	50
60	40	5.91	6.20	6.49	5.89	6.18	6.47	5.92	6.21	6.50	6.00	6.29	6.59	6.08	6.38	6.69	6.10	6.40	6.71	6.13	6.43	6.74	40	60
70	30	5.59	5.86	6.14	5.57	5.84	6.12	5.60	5.87	6.15	5.67	5.95	6.23	5.74	6.03	6.32	5.76	6.05	6.34	5.79	6.08	6.37	30	70
80	20	5.27	5.52	5.78	5.25	5.50	5.76	5.27	5.53	5.79	5.34	5.60	5.86	5.40	5.66	5.93	5.43	5.69	5.96	5.46	5.72	5.99	20	80
90	10	4.94	5.18	5.42	4.92	5.16	5.40	4.94	5.18	5.42	5.01	5.25	5.49	5.06	5.30	5.55	5.08	5.33	5.58	5.11	5.36	5.61	10	90
100	0	4.62	4.84	5.06	4.60	4.82	5.04	4.62	4.84	5.06	4.69	4.91	5.13	4.73	4.96	5.18	4.75	4.98	5.21	4.78	5.01	5.24	0	100
110	-10	4.30	4.50	4.71	4.28	4.48	4.69	4.30	4.50	4.71	4.37	4.58	4.79	4.40	4.61	4.82	4.42	4.63	4.84	4.44	4.65	4.87	-10	110
120	-20	3.97	4.16	4.35	3.96	4.14	4.33	3.97	4.16	4.35	4.04	4.23	4.42	4.07	4.26	4.45	4.08	4.27	4.46	4.10	4.29	4.48	-20	120

Table 3

← Table 1

amount of money may be laid aside in the depreciation fund to build up the total lump sum depreciation by the end of the average service life for the type of plant involved. This money is not stuffed into an old sock at each allotment time, placed in the dark corner of a closet, and the door closed and locked during the years of the average service life. Instead, as it is accumulated, it is used to assist in paying for new items as required by the company.

Thus, the company does not have to acquire so much new money from the sale of bonds and stock and thereby it saves paying the cost of money on that sum. In other words, the company can receive on this sum of money compound interest equivalent to the cost of money. The amount of the depreciation allotment can be reduced by the amount of the compound interest the allotment draws, and, in the end, the reduced allotments and interest must equal the lump-sum depreciation, which should then be credited on the company books to the type of plant for which the depreciation allotment was made.

Before the depreciation payment is reduced by the compound interest, it is known as *Straight Line or Book Basis Depreciation.* After the depreciation is reduced by the compound interest, it is called *Sinking Fund or Annuity Depreciation.* More of this subject will be detailed in paragraph 3.412 to follow.

Theoretically, again, the depreciation fund is used with the net salvage to recover the first cost of the item. It can then be used to replace the removed piece. Thus, the company does not have to obtain so much new money from outside sources, and consequently saves paying cost of money on such new funds. If there were no depreciation fund, it might be necessary to issue more stocks and bonds to raise funds for the replacement of the deteriorated item, as well as for plant enlargement. The replacement may be of the same or different size and type in the same or different location.

Depreciation funds accomplish other services than providing for the replacement of removed plant. One of these services is the maintenance of the financial integrity of the company. Suppose the company acquires money from an individual by selling him bonds or stock. With these funds, it may buy central office equipment, or telephone

← Table 3

poles, or new trucks, for instance. As time goes by and these items depreciate, does the company say to the investor: "Sorry, old boy, we bought poles with your money, and as these have rotted out considerably, we can pay you only half the interest or dividends formerly paid to you?" And finally when the pole is so badly deteriorated that it is replaced, does the company notify the bondholder or stockholder that his securities are now worthless, as the pole has been discarded?

No, for the depreciation fund makes up for the deteriorated pole or other item, and the investor's money is now still of the same number of dollars as before. His investment has been protected and maintained. True, the original pole is gone, but his investment has been transferred to something else, maybe a new pole, by the depreciation system.

In Economic Selection Studies, Annuity Depreciation is used as one of the annual charges against proposed items or existing items retained. If an existing or proposed item is to be removed as part of the study, then annuity depreciation is not used, but Lump Sum Depreciation is substituted. It must be understood that Lump Sum Depreciation is taken into account only when the item is removed, as one of the conditions of the study. But in no case are both types of depreciation used on the same item in the same plan.

Theoretically, Lump Sum Depreciation is the total of all the Annuity Depreciation allotments or payments made during the life of the item to be removed, plus the accumulated compound interest. If the item is to be removed as one of the conditions of the plan of the study, the depreciation fund accumulations will then be wanted to buy the replacement for the removed item. On the other hand, if the item is to remain in service and not be removed within the study period, it will continue to have small annual amounts of depreciation (Annuity Depreciation) charged to it during the study period.

2.324 *Taxes* of various kinds are levied to defray the expenses of government. In economic selection study work, local, state, and federal taxes are involved. These consist of levies against buildings, land, and equipment, as well as outside plant, and against net income. Social security taxes, being applicable only to payrolls, are included as part of the installation costs of new plant and as an addition to the labor portion of the maintenance expense. That portion of this tax paid by the company only is included.

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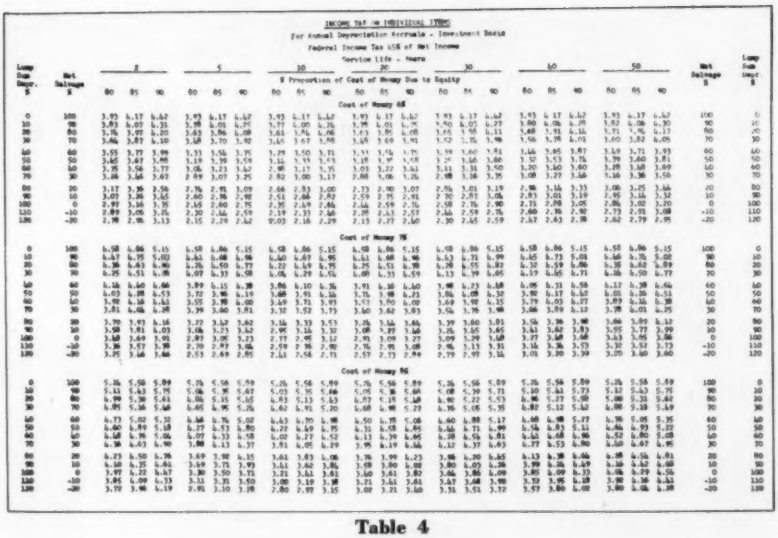

Table 4

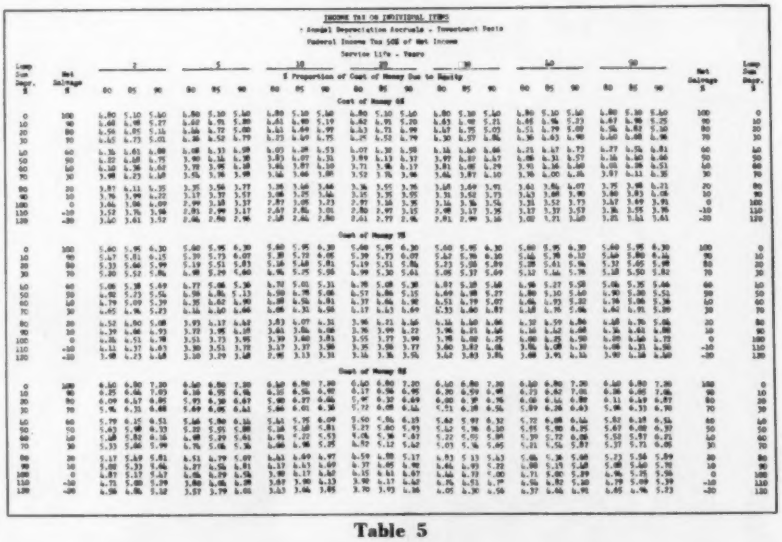

Table 5

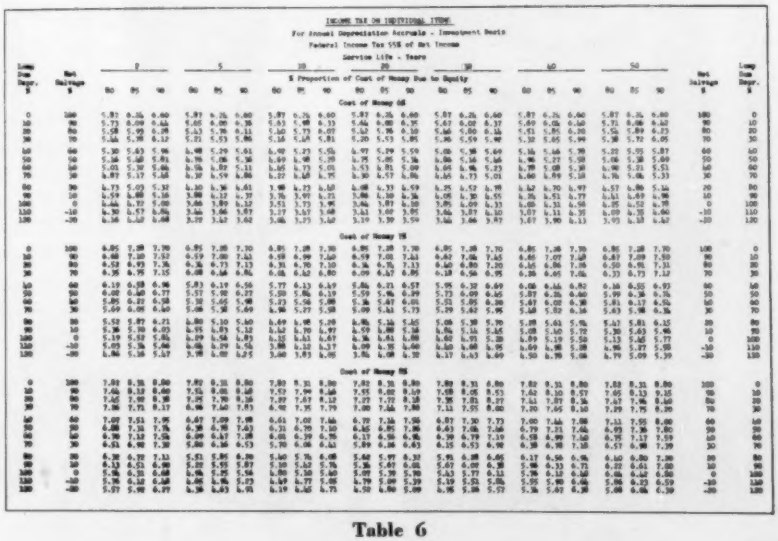

Table 6

Pole Climbing Equipment

By JOHN A. BRACKEN

Part 1

CLIMBING and working on telephone poles necessitates the use of specially constructed equipment —body belt, safety strap and pole climbers.

Two types of climbers are in general use, one in which the length is adjustable, and one in which the length is fixed.

Fig. 1 shows a fixed type climber. It consists of a piece of flat steel called a leg iron, about 3/16 inch thick and 1¼ inches wide, and varying in length from 14 to 18 inches in half-inch sizes, measured from the bottom of the stirrup "S" to the extreme upper end as shown in Fig. 1. A steel prong "G," called a gaff, projects downward about 1¾ inches.

When in use, this climber is attached to the lower part of the wearer's leg, and is held in position by means of two straps. One, called an ankle strap, "AS" in *Fig. 2*, holds the climber to the ankle and foot, where, for comfort, the strap buckle is positioned just outside of the shoe laces. The other, called a leg strap, "LS" in *Fig. 2*, holds the climber to the leg. A cushioned pad, "P" in *Fig. 2*, is inserted between the climber and the wearer's leg as protection from repeated movement at the top of the climber against the leg when the climber is in use.

Before the leg straps are buckled in place, the trousers are pulled up to the shoe top, as shown in *Fig. 2*. This leaves the trousers loose at the knee, thereby permitting more freedom of leg movement.

It is important that the climber conforms in length to the wearer's leg, as determined by a careful measurement from a point one-half inch below the prominence of the inner side of the projecting edge of the knee bone, down to the under side of the shoe at the arch, as shown in *Fig. 3*. When properly fitted, the climber is more comfortable, fatigue is minimized and climbing safety increased.

The weight of the lineman's body is supported by a surface approximately 1 inch wide and the width of the foot in length. This narrow strip directly under the instep is not supposed to carry much weight. Therefore, it is essential that heavy-soled shoes be worn to distribute the body weight over the entire surface of the foot. To keep the climber stirrup in place under the foot, it is desirable for the shoe to have a reasonably high heel.

Fig. 4 shows the correct position taken by a lineman for the first step

Fig. 1

Fig. 2

Fig. 3

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Fig. 4

up a pole, one foot on the ground, the other raised in such manner as to direct the climber gaff toward the heart of the pole. The arms are straight out and the hands wrap around the pole. In ascending the pole, the legs are used, the arms and hands serving only to balance the weight of the body on the climbers and pole.

Fig. 5 shows a lineman ascending a pole using a stroking procedure, and keeping the feet close to the pole. Short steps of about 10 inches long should be taken in the ascent. The diameter of the pole and the length of the lineman's leg between the hip and knee, automatically determine the amount of gaff separation.

Fig. 5

When climbing, the lineman controls his movements by the way he inserts the gaff into the pole. Consequently, only minimum pressure is exerted on the gaff to penetrate the pole to the proper depth, as shown at "D" in *Fig. 6*. Ordinarily the weight of the body is sufficient for this purpose, except on poles of very hard wood, where, of course, slightly more pressure on the gaff is required.

However, at no time is the gaff jabbed into the pole with great force. This not only results in wasted effort, but makes releasing the gaff from the pole more difficult. Furthermore, jabbing the gaff into the pole tends to splinter the wood, thus creating a hazardous condition whereby others might pick up splinters.

While ascending (also when descending), the lineman keeps his shoulders, hips and knees well away from the pole. If he allows his knees to approach the pole too closely, the climber gaff is liable to skid, an exceedingly dangerous situation because falling from the pole may result. Keeping the knees clear of the pole facilitates directing the gaff toward the heart of the pole at each step, thus insuring against the gaff skidding.

To descend the pole, the lineman steps downward, but, in doing so, he makes no attempt to lift the gaff upwards to release it from the pole. He simply breaks the gaff out of the wood by allowing the upper part of the knee to swing gently outward in an arc away from the pole, the climber stirrup serving as a pivot.

Inasmuch as certain hazards are involved relative to pole climbing, the following precautions should be carefully considered by beginners:

(1) When climbing poles, perfect coordination of mind, arms and legs, as well as proper functioning of eyes and

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Fig. 6

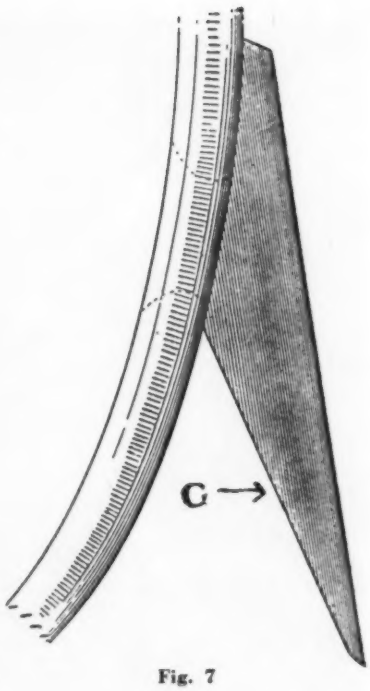

Fig. 7

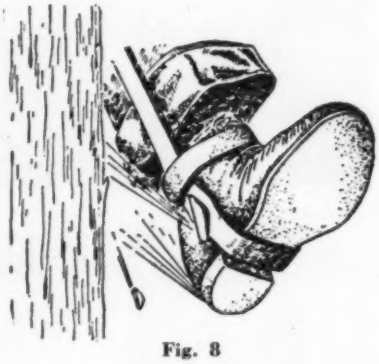

Fig. 8

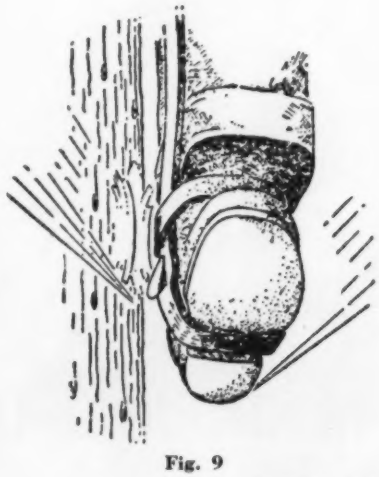

Fig. 9

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manufacturers of telephones, switchboards and related apparatus since 1907

TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett

March 15, 1958

Section 11 (continued)
Miscellaneous Traffic Information

Judgment Methods Which Assure Reasonably Good Results in Engineering

(1) If there is no service data available, what is the service status in the office? Does the information presented have the approval of the operating people?

(2) The use of inefficient facilities, which may require operating labor to maintain acceptable service, often comes up for consideration, as in manual offices soon to be cut to automatic. The length of time inefficient facilities may be used, coupled with the length of time a poor service may continue, are important factors which are used by the engineer when weighing service against costs.

(3) Is the data to be used recent enough to represent the true service picture? The traffic engineer must be wary of hearsay or unsupported opinions.

(4) Is the amount of data large enough to be reliable, or so small a sample that it is doubtful if the deviation from average has been eliminated.

(5) Long periods of consideration are hardly justified in reaching decisions affecting facilities which cover only a small percentage of the costs.

(6) The traffic engineer should not stray from standard facilities, unless the life of such facilities is short. Money may be saved for the moment by the use of off-standard facilities but these savings could be wiped out in a hurry if future growth was based on standard arrangements.

(7) He must keep up to date on new developments so that he may specify them when they will induce better service at a lower cost.

(8) The traffic engineer must work hand in hand with the Plant Engineer in order that he may anticipate changes in equipment design which could change the requirements of the project.

(9) Too, he should become acquainted with the new operating practices in order that he may plan and project additional facilities if needed, or suggest a new equipment feature that could be adapted to the practices for the betterment of the over-all service.

Handling Overloads

Heavy calling beyond the capacity of the equipment causes serious dial tone delays and bring about service criticism. Such conditions are aggravated because they promote dialing before tone, which, in turn, develops:

(1) Partial dialing.
(2) Permanent signals.
(3) Call failures which result in added traffic through repeated attempts.

The effect of overloads would be less serious if the subscriber would wait for dial tone. Subscriber instruction activities are of prime importance, particularly at times where delayed dial tone speed is a recent occurrence. Control measures are needed to preserve the call carrying capacity of the office and to prevent equipment irregularities.

Recognition of Overloads

Extreme overloads are of two types:

(1) Unexpected surges due to such conditions as storms, utility failures, emergencies, etc.
(2) Anticipated situations such as holidays, sporting events, special community programs and recurring daily overloads.

It is the management's responsibility to anticipate overloads when possible, based on:

(1) Previous experience.
(2) Past trends and existing traffic volumes.
(3) Station growth and trend in calling rates.
(4) Advanced knowledge of special events, disclosed by contact with commercial department, the public, newspaper articles, advertisements, etc.

Plans should be made in advance to handle anticipated overloads, as follows:

(1) See that all equipment is kept in service.
(2) Consider possible control measures.
(3) Discuss with all departments the possible methods that could be taken to reduce traffic volumes.

Some indications of overload conditions are:

(1) Complaints of no dial tone.
(2) Sudden change in volume or nature of assistance calls.
(3) Operator difficulty in completing local calls.
(4) Excessive scanning of traffic meters.
(5) Increased current drain shown on meters at power board.
(6) Reports received at Repair Service, such as no dial tone, inability to get numbers, etc.

Minimizing Effect of Overloads

Management should have a definite, well-thought-out plan of action to be taken when overloads occur. The objective should be to handle a maximum volume of traffic giving equitable service to all subscribers.

All departments should be familiar with contemplated procedures and understand the effects they will have on service.

All plans should be applicable to the office in question and the conditions that arise. They should be coordinated with both the plant and traffic departments. At the first indication of service overloads, plans should be discussed with all departments and personnel concerned

NUMBER 17
Toll grade. These insulators are employed for all exchange circuits and for all toll and trunk circuits that do not exceed ten miles.

Dependable ...in emergencies

When they're on the line, you can *depend* on their strength and uniform high quality.

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Today, as always, Hemingrays are world standard for quality, and most of the overhead telegraph and telephone lines of the world are carried on *dependable* Hemingray Glass insulators. They are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

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TELEPHONY'S Traffic Engineering Handbook

By Gilbert R. Brackett **March 15, 1958**

in order to develop the necessary action. To bring forth joint participation and corrective measures, good judgment based on the overload condition and past experiences must be used.

Traffic measures to control overloads are:

(1) Put the maximum force at switchboard.

(2) Discontinue any special activities that may contribute to office load.

(3) Discontinue any special activities that use operator time.

(4) Temporarily modify operating practices to make more effective use of operator time and equipment. Discontinue unessential practices such as, writing memos, making voluntary subsequent attempts on busies, don't answers, no trunks, etc. Ask caller to try again on requested subsequent attempts.

(5) Give delay reports immediately without making attempt, if known "busy" or "no trunk" condition exists.

Special practices should be supervised continuously. It is important to evaluate the effect of special practices repeatedly:

(1) Discontinue if ineffective or causing undue reaction.

(2) Discontinue at once after emergency has passed and special practices are no longer needed.

Section 12
Traffic Engineering
Short Cuts—Automatic

This method of engineering is not recommended for exchanges of any size over 200 lines. To use it for all traffic engineering purposes would conflict with detail engineering and could end up in a switch shortage. However, as a time saver, it may be used as a preliminary estimate of shelf requirements, building requirements and for preparing preliminary estimates of automatic vs manual cost comparisons. Because of the judgment factors involved, the tables should be used only by those familiar with the normal engineering of facilities.

The following is a brief description of the steps taken in general when calculating the quantities of equipment required for a small system:

(1) Determining the future development of the exchange in lines and stations for the next one, two and five-year periods.

(2) Determine from traffic studies made in the central office, the average busy-hour calling rate per line for each class of call by:

(a) Separating the total volume of calls originating during the busy hour into their classifications, such as extension-to-extension, extension-to-central office, incoming from central office, etc.

(b) Dividing the total number of each class of call by the total working lines. Example: There are 57 extension-to-extension calls during the busy hour and the number of working lines is 90, the average busy-hour calling rate per line would be: $57 \div 90 = .63$.

(3) Determine the busy-hour holding time in seconds for each class of call, obtained from the two-minute trunk or switch usage count taken during the busy hour. Multiply the average total trunks or switches that were busy by 120 (seconds in two minutes) and divide the result by the busy-hour calls. Example: There were 30 trunks or switches busy and there were 40 calls. The holding time would be: $30 \times 120 \div 40 = 90$ seconds.

(4) Determine the busy-hour hundred call seconds, or CCS per line, by multiplying the busy hour calling rate per line by the holding time. The result is then divided by 100. Example: The average busy-hour calling rate per line for extension-to-extension service is .63. The holding time is 90 seconds. The CCS per line would be: $.63 \times 90 \div 100 = .57$ CCS per line.

BUSY HOUR BASIC DATA TABLE

Item	*(1) Class of Call*	*C.R. per (2) Line*	*(3) H.T.*	*CCS per Line (4)*
(1)	Extension to extension...	.63	90"	.57
(2)	Extension to C.O. (9 level)	.84	160"	1.34
(3)	Extension to tie line.....	.04	180"	.07
(4)	Extension to L.D.....	.03	200"	.06
(5)	Extension to misc.....	.12	50"	.06
(6)	Extension to "O" level....	.25	112"	.28
(7)	Total originating traffic..	1.76	128"	2.26
(8)	Incoming from C.O.....	1.20	220"	2.64

The growth estimate shows the following developments can be expected:

	Present	*1-year*	*2-year*	*5-year*
Lines	90	110	130	190
Stations	110	130	150	210

Using the foregoing data the traffic engineer proceeds to determine the probable volume of busy-hour traffic and its distribution at the yearly periods. This is done by multiplying the basic factor for each class of call by the estimated growth in lines. Example: If the basic busy-hour calling rate for extension-to-extension calls is .63 per line, the probable number of calls that class will originate during the busy hour of the two-year period would be:

130 lines $\times$ .63 calls per line = 82 calls total.

Again, if the basic busy-hour CCS per line for extension-to-central office trunks (9 level) is 1.34, then the probable number of CCS of that class which will originate during the busy hour of the two-year period would be:

130 lines $\times$ 1.34 CCS per line = 174 CCS total.

(Section 12 will be started next week)

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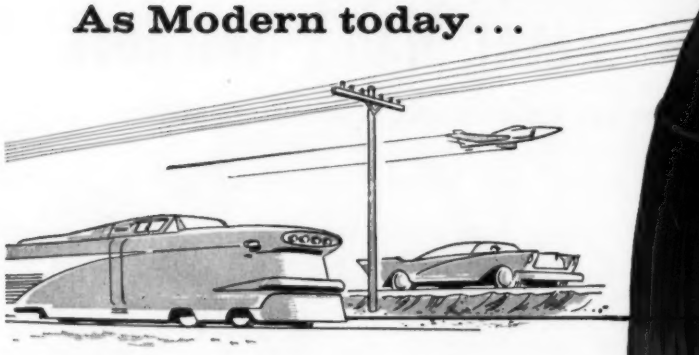
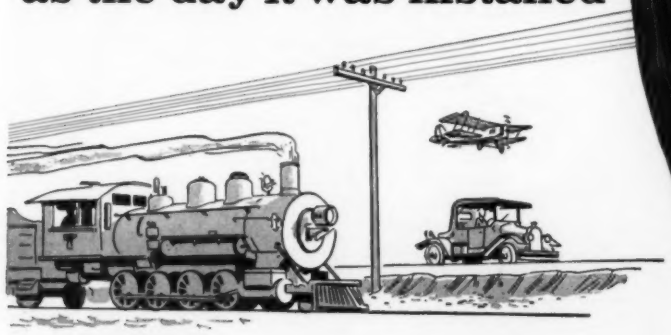


as the day it was installed



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Not only proved in past performance, but designed to stay modern for the future, Copperweld Line Wire is the best engineered conductor for voice, carrier and signal circuits. Write today for your copy of the Copperweld Engineering Data Book.

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STRENGTH

PROVED IN SERVICE FOR OVER 40 YEARS

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

THERE IS definitely a present-day increase in the construction of underground communication facilities. Buried wire and cable and cable in conduit is on the increase throughout the United States. This trend may be traced to numerous causes.

First, improved methods, tools and materials have reduced the cost of underground construction materially over the past few years. Then, also, many pole lines have become overloaded and proper clearance from power circuits is becoming more difficult and expensive.

Moreover, in many new residential developments, aerial construction has been ruled unsightly and objectionable. And, furthermore, when improved methods, tools and materials and reduced maintenance costs over a term of years are carefully considered, underground in some cases will prove more economical than aerial plant.

However, we have never been able to understand the logic of the plan followed by the various companies when all utilities are placed underground in a new housing development. Perhaps the sewer installations will be made first by digging a big trench, laying the tile and backfilling. Then, say the water people come next, dig another trench, lay their pipe and backfill.

Then the gas company will move in and do likewise.

Later, come the telephone and power companies each with separate trenches. How these five different utilities can dig separate ditches and keep out of each other's way as much as they do will always be a mystery.

It would appear that a more coordinated effort between all utilities in the construction and maintenance of their underground facilities would pay big dividends, especially in all new housing developments.

Perhaps the sewer would necessarily have to be in a separate trench. It would seem, however, that it might be possible to combine the water, gas, telephone and electricity into one common underground structure which would prove a real economy.

It is possible that someday someone will design a utilidor of some type so that it will be feasible to combine these facilities in an arrangement that will prove an economy and avoid digging up paved streets frequently to make expensive repairs.

There is little doubt that the present trend toward underground construction is good for the communications industry. Europe is far ahead of this country in the use of underground communication facilities. It has proved economical for them and there is every reason to believe that, if properly planned, it will be equally satisfactory in the United States.

•

The Western Electric Co. purchased nearly $200,000 worth of diamonds with a hole in them last year. These diamonds bear no resemblance to the sparkly kind as they are black, greasy to the touch, and have little or no lustre.

These industrial diamonds, which are purchased as diamond dies (diamonds with holes drilled in them), play a vital part in the production of Western Electric wire and cable. Last year, over 48 million miles of wire were drawn to uniform and accurate size through these diamond dies. This is enough wire to connect the earth and Mars!

•

The following is quoted from a letter recently received from Hugh M. Hamilton of El Segundo, Calif.

"Just as a matter of interest, I should like to point out that the four companies serving the Los Angeles Extended Area have had to expand quite a bit during the past 10 years to keep up with the population. The Los Angeles Extended Area is composed of 35 exchanges, served by the Pacific Telephone & Telegraph Co. with 23 exchanges, General Telephone Co. of California with eight exchanges, California Water & Telephone Co. with three exchanges, and Sunland-Tujunga Telephone Co. with one exchange.

"These exchanges include 89 central offices, of which 87 are fully dial and two partly dial and partly manual. There are four more central offices scheduled to go into operation this year. Ten years ago there were only 83 central offices, of which 73 were fully dial, one was partly dial and partly manual, and nine fully manual.

"When I use the term central office, I am referring to the central office building itself, not merely to the prefix designation. The number of prefix designations would be much greater than the above figures."

This seems like a lot of telephone service, but then Los Angeles is a big city as anyone from California will freely admit.

•

A friend of ours recently took a trip to Australia and brought back a newspaper titled: *The Australian Post Office*. It has the following to say about their telephone service:

"Fifty years ago Australia had 47,000 telephone exchange lines, fewer than 1½ per 100 head of population. Today there are 1,280,000—more than 13 per cent of population.

"Australians are great telephone users. Last year more than 72,000 exchange lines were added to the Commonwealth network, and this year the number of connections is expected to be a record.

"To cope with this constantly increasing demand, the Post Office must not only keep on adding to its equipment but, by taking advantage of every technological step forward, it must save time and money, and continuously improve the standard of service.

"Approximately 17,000 employes of the Post Office are being trained for a vast range of jobs. Altogether there are 18 full-time and 15 part-time courses conducted by or arranged through the department."

•

James S. Cantlen, vice president & general manager, received an award

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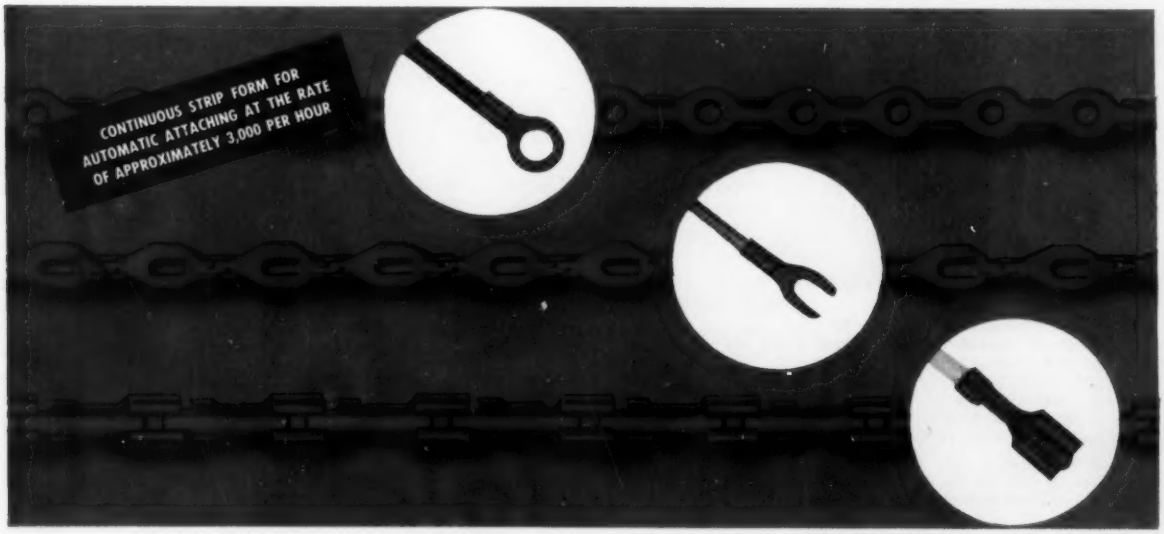
Electrix RAPIDON TERMINALS*

**Manufactured To Meet UL Requirements*

Attached with our Electro-matic Attaching Machine, Electrix Rapidon Terminals speed up application to the rate of approximately 3,000 per hour and assure uniformly dependable crimps for greater holding power.

Illustrated are a few of our standard continuous strip terminals for telephone and electric wires and cables. Where quantities warrant, we will make special terminals to your specifications. Submit blueprints and requirements for quotation.



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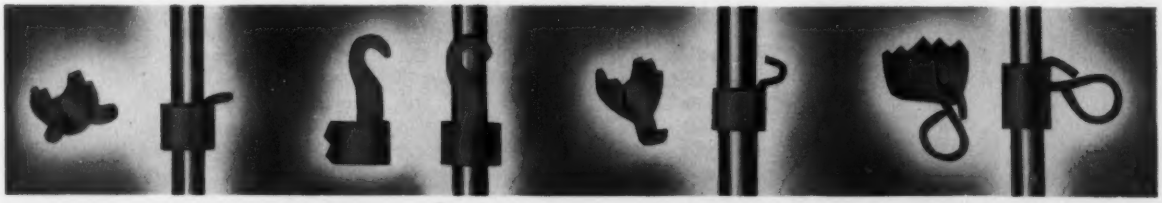
Electrix Corporation is also a dependable source for a complete line of sturdy strain reliefs and cord tips designed for maximum holding power and easy application. For substantial savings on your strain relief requirements, write Electrix Corporation stating quantities desired and specifications.



Electrix Corporation

WRITE FOR SAMPLES AND PRICES

ASHTON, RHODE ISLAND

on behalf of the Pacific Telephone & Telegraph Co., in San Diego, Cal., recently. Mr. Cantlen was presented the Junior Achievement National Industry Award. The plaque was given to the company as sponsor of the Tel-A-Pen Co., which took first place nationally in the miscellaneous products division last year.

The Tel-A-Pen Co. was composed of students from several San Diego high schools. They set a national sales record with their product, a desk pen set in a miniature telephone base.

•

The Radio Corp. of America recently produced its 2-billionth electron tube at its plant in Harrison, N. J. This was a traveling wave tube designed for use in classified electronic equipment for the Armed Forces. It will form the heart of a new defensive system being built for the Navy.

•

The following statement was made recently by Frederick R. Kappel, president of the American Telephone & Telegraph Co., in a speech before the American Institute of Electrical Engineers:

"In this dynamic expanding world, the competent engineer has to lead a dynamic and expanding life. In my judgment, there is simply no room left for any routine approaches to engineering, or for standing still with the mental equipment we've got.

"The engineer has to grow and change with the times, and constantly equip himself to handle new problems.

"He has to nourish his mind and broaden his outlook to make sure that neither gets obsolete. And, at times, he has to look ahead."

To help its engineers keep abreast of a constantly changing technology and to enable them to make the best use of the complex instrumentalities of the future, Southern Bell Telephone & Telegraph Co. is presently engaged in an engineering training program of considerable scope.

The training being received by these engineers takes many forms, ranging from simple on-the-job training to a special two-year course of study at the Bell Telephone Laboratories.

•

It is reported that in 1910 unskilled workers accounted for 36 per cent of the work force. In 1950, this was down to 19 per cent. In the same period, skilled and semi-skilled workers rose from 15 to 23 per cent.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. Can you furnish information as to how best to construct a storage battery rack for use in a medium-sized dial exchange?

A. We would not recommend local fabrication of this type of rack. It will undoubtedly prove more satisfactory and economical to purchase an all-steel rack from the supplier of your battery.

•

Q. We have heard rumors of a small, light-weight, digital computer that is now available at a reasonable cost. Can you furnish us with any information on this item?

A. I assume that you have reference to the "Leprechaun," a high speed digital computer that was developed and built in the Bell Telephone Laboratories. I am advised that this device is about the size of a home television set and requires less power to operate. It can take its instructions immediately from its memory—no matter where the instructions may be stored. It is capable also of storing 1,024 words in its memory, each word consisting of 18 binary digits.

This new computer was developed under an air force contract and is to be used for programming and logical-design research on digital computers for military real-time control applications. We do not have any information as to its cost, but we can safely assume that it will not be cheap.

•

Q. We plan to make a trial installation of some self-supporting exchange cable. Can you give us any information on this type of cable and how it may be used?

A. One type of self-supporting cable is available in 5, 11, 16 and 26 pairs. The conductors are No. 19 AWG high strength 40 per cent conductivity Copperweld with high molecular weight polyethylene insulation. The cable core is wrapped spirally with a non-hygroscopic tape and then covered with an aluminum shield. The jacket is black weather-resistant polyethylene.

Care should be observed in attaching this type of cable to poles or to buildings. Special fixtures are available for this purpose that can be purchased from your telephone supplier. If these fixtures are installed in an approved manner, the cable will give good service.

•

Q. Please advise us what type of lines will be required for the successful use of a subscriber's carrier system?

A. One type of subscriber carrier system is intended as a supplement to existing voice circuits, and does not require any special line facilities. The circuits selected may be unloaded cable, wire line, or a combination of the two. Where special performance standards are required, however, it is necessary that the lines be in good condition. Open wire sections of the line should be transposed to R1 or better.

The limitations upon the range of this system are determined by the same three factors encountered in any system layout, i.e., attenuation, noise and crosstalk.

•

Q. Will it be possible and economical to use automatic ticketing equipment in an exchange of approximately 3,000 stations?

A. This, we believe, will depend on your location, the nature of your traffic, and the number of dialable calls that you handle. We know of one exchange, in which automatic toll ticketing is installed, that, on the average, handles 900 calls each day from approximately 1,500 telephones.

If these calls were handled by operators and manually timed, at least three additional operators would be required. In this particular case, the automatic toll ticketing equipment will pay for itself in about two years. There is no doubt that the use of automatic ticketing equipment will increase rapidly during the next few years and, in our opinion, it will prove a worth while investment on practically all Independent systems.

Here's a telephone battery that:

lasts at least 40% longer!

requires 80% less current and water!

delivers high output all its life!

C & D's PlastiCal is the most outstanding floating-service battery of the last 50 years. Here's a basically new battery that combines a durable, clear-plastic case with lead-calcium* grids. This new alloy of pure lead and calcium gives grids the strength of those with a large antimony content, but eliminates the harmful effects of antimony.

**A development of Bell Telephone Laboratories*

C & D's PlastiCal has these advantages:

1. ***a 40% longer life*** than any lead-antimonial battery in floating-service. There is no antimony in the PlastiCal to poison negative plates.
2. ***requires 80% less current*** to maintain itself in a fully charged condition. Lower charging rate means plates last longer.
3. ***requires 80% less water.*** Because PlastiCal uses less current, there is less electrolysis of water.
4. ***low maintenance cost.*** PlastiCal can be checked at a glance because the electrolyte level is always visible.
5. ***delivers high output throughout its life.*** Rated capacity remains steady because negative plates do not become contaminated.

C&D

BATTERIES, INC.

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For complete information and specifications on PlastiCal—the century's greatest battery development—write for folder T-528.

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

Courts and Commissions

N. Y. Senate Approves Bill On Highway Relocation Aid

A bill approved by the New York State Senate on Mar. 5 would exempt public utility companies from the cost of relocating sewers, poles and other property during the construction of federally-aided highways (TELEPHONY, Mar. 1, p. 50).

Under the measure, the saving to utilities, estimated at 78 million dollars in the next few years, would be made part of the cost of the construction.

Convict 3 In Long Distance Credit Card Frauds in Ark.

The United States' first convictions for fraudulent use of long distance telephone credit cards were ordered by the Hot Springs Arkansas Municipal Court on Mar. 3 and Mar. 5.

Municipal Judge M. C. Lewis fined two men $150 each and sentenced them to four months in jail. The third man drew a $100 fine and a three-month jail sentence.

John J. Metowski, formerly of Tampa, Fla., was found guilty of illegally using a credit card number which had been issued to another person. On Feb. 28 he placed a call from Hot Springs to Glenbrook, Conn., using a credit card number which had been surrendered to local telephone officials by its rightful owner earlier in the same day. Police arrested Metowski following a tip from the Southwestern Bell offices.

A former Chicagoan, Robert Snyder, was found guilty of using a non-existent credit card number in a call to Miami on Feb. 24. A tip from the Southwestern Bell Hot Springs office enabled police to close in.

Appeal bonds of $1,000 were set for both Metowski and Snyder.

Eugene O'Casey pleaded guilty to a charge of obtaining property under false pretenses (the technical charge used in prosecuting the credit card cases). Judge Lewis fined him $100 and sentenced him to three months in jail. The jail sentence was suspended because of family hardship. O'Casey agreed to pay the fine. His arrest by Hot Springs police also followed a tip by the telephone company when O'Casey used a nonexistent number to call New Orleans on Mar. 1.

In handing out fines and jail sentences, Judge Lewis said that these were the first such cases that had come up in his experience. He said: "If other such cases, where the defendants are found guilty, come before this court, they can expect close to maximum sentences."

Approve Loan, Rate Raise For Oregon Companies

The Oregon Public Utility Commissioner on Mar. 4 authorized the Monroe Telephone Co. to enter into a loan agreement with Stromberg-Carlson (a division of General Dynamics Corp.) to borrow $55,000.

The loan is to be repaid in 240 consecutive substantially equal monthly installments. At the time the loan is extended, the Monroe company's total indebtedness is not to exceed 75 per cent of the depreciated original cost of its property, the commissioner ordered.

•

On Mar. 6 the commissioner approved a $7,293 rate increase for the Umpqua Telephone Co., Elkton, affording the company a 1.80 per cent rate of return on an average net plant and working capital figure of $152,909.13.

The Umpqua company in April 1957 cut over to automatic operation its Elkton and Scottsburg exchanges. Financing was made available, the commissioner noted, through an REA loan of $166,099.04.

For the 12-month period ending July 31, 1957, the company experienced a deficit in net operating revenues of $4,048.19. The approved increase will produce estimated net operating income of $3,115.70. Old and new rates are:

Business:	*Old*	*New*
One-party	$5.25	$10.00
Two-party	4.75	8.00
Multi-party	3.00	5.75
Residence:		
One-party	4.75	6.50
Two-party	4.25	5.75
Four-party	3.75	5.25
Multi-party	3.00	5.25

Tenn. Independent Asks OK On Three Purchases

The Millington Telephone Co., on Feb. 28 filed a petition with the Tennessee Public Service Commission to purchase the Mason Telephone Co., the Stanton Telephone Co. and the Southern Bell Telephone & Telegraph Co. facilities serving the Millington Naval Air Station. Both the Mason and Stanton exchanges would be converted to automatic operation. The company also asked approval of a $399,000 loan from the REA.

Grant Increases, Dial Rates In Neb.; Two Incorporate

The Nebraska Railway Commission on Feb. 21 authorized the Clarks Telephone Co. to establish rates for service effective with the conversion of the exchange to dial service (TELEPHONY, Feb. 8, p. 30).

The company was also given permission to discontinue extended area service from its Clarks exchange to Central City and to borrow $164,000 from the REA for rebuilding the exchange and conversion to automatic operation.

At the same time the Northwestern Bell Telephone Co. was permitted to discontinue the extended area service from Central City to Clarks which had been provided on an optional charge basis.

Rates estabilshed at Clarks will be as follows:

One-party business	$7.50
Two-party business	6.50
Multi-party rural business	6.00
One-party residence	5.00
Two-party residence	4.25
Four-party residence	3.75
Multi-party rural residence	4.00

•

On Mar. 4 the commission authorized three Independent companies to raise their rates.

The Skeedee Independent Telephone Co., St. Edward, was granted a rate increase on all classes of service.

The commission last year granted the company's application in part. The applicant carried the case to the Nebraska Supreme Court, which reversed the

commission order on Feb. 7 (TELEPHONY, Mar. 1, p. 43).

The Wynot Telephone Co. won commission approval for increased rates at its Fordyce exchange.

The commission said the increase would raise the company's rate of return to 4.62 per cent on a $59,231.72 investment.

Farmers Independent Telephone Co., Red Cloud, was also granted an increase.

•

In other actions, the Roten Valley Telephone Co., Cozad, filed articles of incorporation on Feb. 28. Authorized capitalization was listed as 20 shares of stock, par value $320, for a total of $6,400.

Incorporators are Elmer Hilton, Ralph Anderson, Earl Malcom, Jim Vogt, and Wilbert Kruse, all of Cozad.

Also recently incorporated is the Northside Telephone Co. of Imperial, which filed non-profit articles of incorporation with the secretary of state.

Incorporators are Delbert T. Thompson, W. E. Humphrey, Herman Molzahn, Andrew R. Bands, John P. Hodges, and George A. Newman, all of Imperial.

Asks to Buy West Coast Company Oregon Exchanges

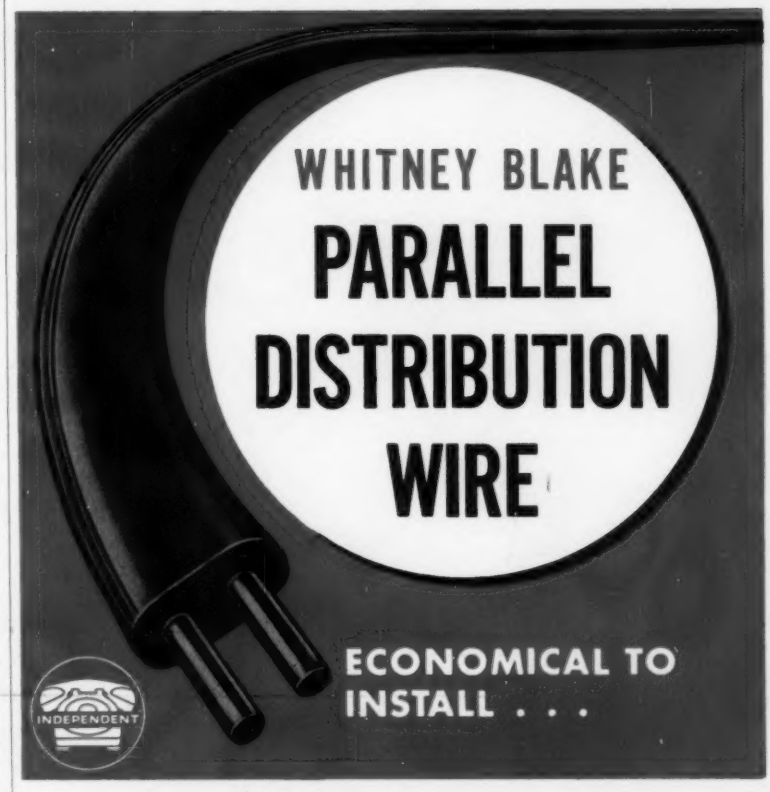
Beaver State Telephone Co. has applied to Oregon Public Utility Commissioner Howard Morgan for an order authorizing acquisition of West Coast Telephone Co.'s Lakeview division properties.

L. Gray Beck of Everett, Wash., West Coast vice president and general manager, states that the application also requests the commissioner to issue orders approving issue and sale of securities by Beaver State, establishment of rates, and signing of an agreement with an affiliate.

Beaver State proposes to finance the acquisition by issuing West Coast 29,000 shares of Beaver State stock, par $10, and paying West Coast $368,300, "adjusted as provided in the contract."

Beaver State further proposes in the application that "its rates to be charged shall be the rates presently being charged" in the Lakeview division by West Coast. Beaver State accompanied its application with a complete schedule of tariffs, all identical to those now in effect in the division which encompasses exchanges at Adel, Algoma, Chemult, Chiloquin, Fort Klamath, Lakeview, Paisley, Plush and Summer Lake.

The application contains the draft of an agreement under which West Coast would operate all properties in



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the division for Beaver State and be reimbursed for its efforts without profit.

Beaver State proposes paying West Coast for these properties out of funds committed to Beaver State by the Rural Electrification Administration. REA approved a $1,197,000 loan to Beaver State last Oct. 22.

The application makes it plain that, once approval is received from the regulatory bodies, Beaver State will begin functioning as a wholly-owned subsidiary of West Coast. Receipt of such approval also will signal Beaver State's launching of a five-year program to expand telephone facilities in Lake and Klamath counties.

"Primary purpose of the establishment of Beaver State was to make possible West Coast's obtaining an REA loan at a low enough interest rate to insure sound financing of its operations in the Lakeview district," Mr. Beck's statement explained.

Five Cities Appeal Raise Granted C&P of Virginia

Official notice of appeal of the rate raises recently granted the Chesapeake & Potomac Telephone Co. of Virginia, has been filed with the Virginia Corporation Commission, it was reported on Feb. 21.

Pressing the fight against the Jan. 1 increases, amounting to $7,228,000 additional annual gross revenue, are five cities—Lynchburg, Hopewell, Hampton, Norfolk and South Norfolk, and two counties—Arlington and Fairfax.

The three-man commission, in a two-to-one decision on Dec. 23, granted the raise. Commissioner Ralph T. Catterall differed sharply with Commissioners J. Lester Hooker and Jesse Dillon. Catterall would have allowed the company only $2,277,000.

The commission's decision will be appealed to the Virginia Supreme Court of Appeals.

Carolina T&T Seeks Additional Raise

The Carolina Telephone & Telegraph Co., Tarboro, on Mar. 6 filed a petition with the North Carolina Utilities Commission asking for a rate increase over and above the $1,500,000 increase it put into effect with November billings which is still pending before the commission (TELEPHONY, Nov. 30, 1957, p. 55).

Carolina Telephone is the first telephone company ever to use a North Carolina law, which allows a utility company to put rates into effect by posting a bond with the commission to care for refunds which might be necessary, if the commission does not approve the amount of the increases.

The company put their initial rate raise request into effect with their Nov. 25 billing and posted a $750,000 bond at the same time saying that "at a later date, we expect to ask for additional increases in order to provide a fair return on the fair value of our property."

A group representing most of the 41 counties served by the company has organized and hired an attorney to oppose the increases.

The company figured that its rate of return was 4.51 per cent on an investment of some 68 million dollars prior to the November rate increase and that the return still will be less than 6 per cent if the November increase is approved. Carolina T&T said that "6 per cent is less than a fair rate of return."

A return of 6 per cent has been the commission's standard in rate cases.

The company asked that the commission in determining what is a fair rate, consider the investment in property "to be dedicated to the public use in the foreseeable future."

It said that its total telephone plant investment had increased from 37½ million dollars at the end of October 1952 (investment date for last rate proceedings) to over 79 million dollars at the end of December 1957—an increase of 41 million dollars. During the same period the number of telephones increased from 105,463 to 153,279.

The total telephone plant added per telephone gained, since the last rate proceeding, it said, is $870. This cost per telephone, the company said, "reflects the increases in costs of materials and labor during the period as well as the additional investment required in the improvement of service."

"The high cost of construction as indicated by the additional investment per telephone gained during the period has had the effect of depressing the rate of return as allowed by the commission in its order of July, 1953, which, the company said, was the last application for a rate increase.

Notwithstanding the gain in stations, the petition added, the company had 7,400 unfilled applications for telephone service at the end of 1957 as well as a substantial number of requests for higher grades of service from existing customers.

The petition stated that the company has financed its expansion and improvement program through the issuance and sale of common capital stock and long-term debt as well as through borrowing from banks on short-term loans. On Oct. 31, 1952, the total capital obligations of the company, including short-term loans, amounted to $32,778,319 as compared with $66,508,123 at the end of 1957.

The company recommended that any increase that might be granted by the commission "should be spread on the business rates of the company's exchanges and on miscellaneous charges rather than on residence rates."

This petition means a delay in a hearing on the original request which had been set for Apr. 1 since the company asked, and the commission agreed, that both requests be heard at the same time.

The company said that last year's operating revenues amounted to $18,743,449; expenses were $11,757,073; and taxes amounted to $3,875,991.

Washington Independent Seeks Rate Increase OK

The McCleary Telephone Co. asked the Washington Public Service Commission for authority to increase rates, it was reported on Feb. 27.

Manager Lee Bolles said that there has been no change in rates in McCleary since July 1952. The proposed new monthly rates are:

One-party residence	$4.50
Four or 10-party residence	3.20
One-party business	6.25

This is an increase of about 25 cents per month over the present rate for each class of service.

Michigan Company Acquires Independent Exchange

The Michigan Public Service Commission granted the Southern Telephone Co., Brooklyn, authority to acquire the Hanover Horton exchange formerly serviced by the Horton Switchboard Association, it was reported on Feb. 23.

In addition to expanding the service, the Southern company will construct an automatic central office to service both communities and will explore the possibilities of extended area service with Michigan Bell Telephone Co.

Approximately 600 subscribers will be added to the 3,000 the Southern company presently serves.

OK Sale of 5 N.D. Companies

The North Dakota Public Service Commission granted the application of Polar Rural Telephone Mutual Aid Corp., Grafton, to purchase properties

of East-Dewey Telephone Co., Kinloss West-Dewey Telephone Co., Fairdale-Kinloss Telephone Co., and Kinloss-Silvesta Telephone Co., all of Fairdale, and the Farmers Mutual Telephone Co., Park River, it was reported on Feb. 26.

Cut C&P of W. Va. Rate Raise OK Intrastate Raise

West Virginia's Public Service Commission on Mar. 5 cut $264,000, on an annual basis, from the increased residence rates which the Chesapeake & Potomac Telephone Co. of W. Va. had put into effect in that state last Sept. 23 (TELEPHONY, Oct. 5, 1957, p. 35).

The commission also announced it had granted C&P a $666,000 a year increase on intrastate toll calls and in related overtime toll charges. The toll increase was authorized effective as of Mar. 4 (TELEPHONY, Feb. 22, p. 58).

The $264,000, which comes off a $3,987,000 increase in rates which C&P put into effect last September, had been instituted under bond to cover refunds in case the commission ultimately allowed a smaller amount.

The order means that C&P must refund to its 256,000 residential subscribers in West Virginia the difference between the rates now authorized and the amounts paid since September, plus 6 per cent interest, it was reported.

The commission estimated that the new residence and intrastate toll rates will mean increases of $4,389,000 in C&P's gross annual revenues in the state and $1,148,000 in net annual income, as compared to revenues prior to last September.

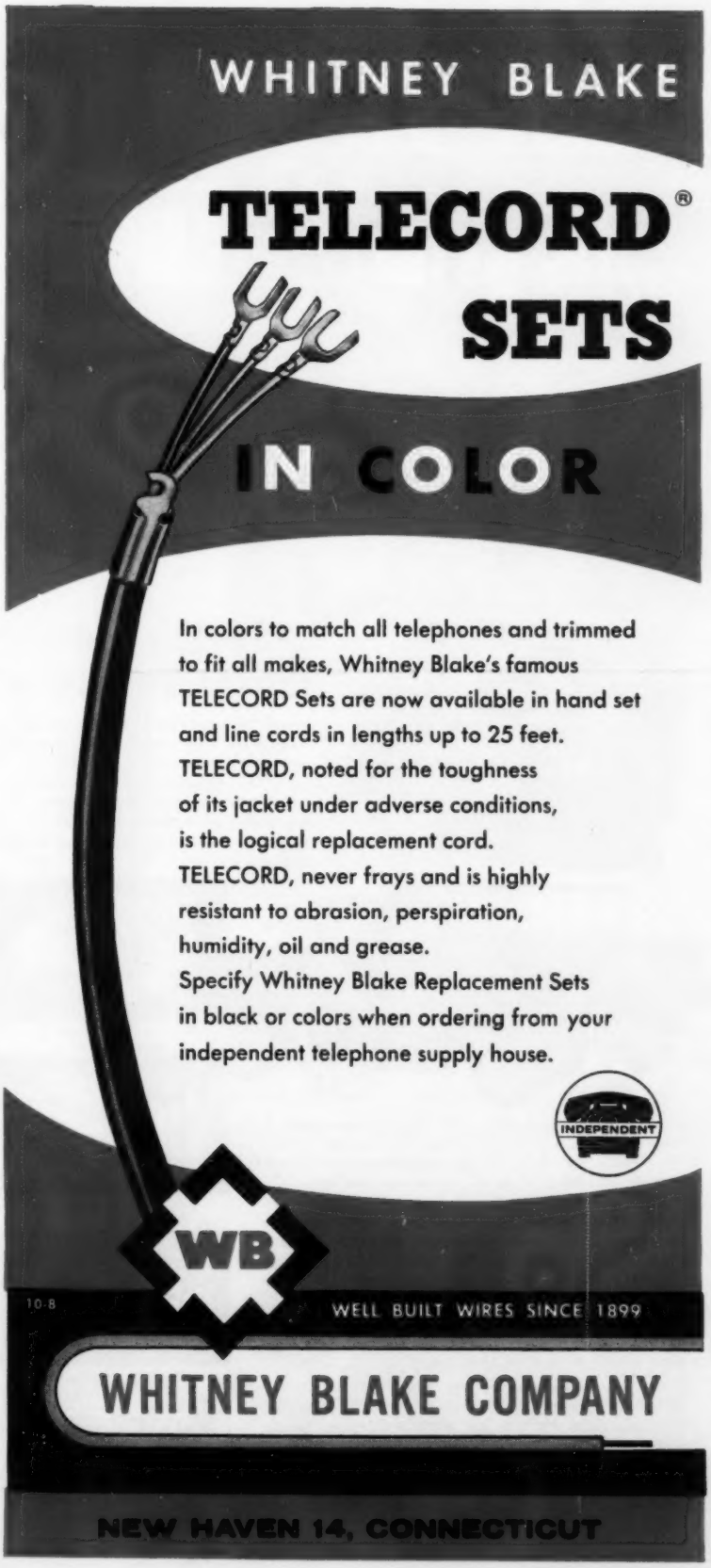
Rates were calculated by the commission on the basis of allowing C&P a return of 6.35 per cent on its net original cost rate base. C&P asked for earnings of at least 7 per cent, although it presented its case during hearings before the commission on the basis of rates needed to provide a 6.42 per cent return.

OK Sale of Two Mo. Mutuals

The Missouri Public Service Commission on Mar. 4 authorized the Northeast Missouri Rural Telephone Co., Green City, to purchase the Hartford Mutual Telephone Co. and the Livonia Mutual Telephone Co.

Two Ask Raise in Wisconsin

The Wisconsin Public Service Commission on Mar. 13 heard two applications for rate increases, filed by the Prentice Telephone Co-op and the Gilmanton Dover Farmers Telephone Co., Gilmanton.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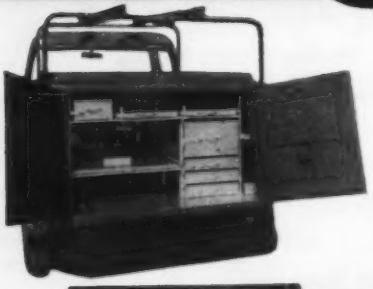

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Concluded from page 18

Mitchell said the administration would stick by its policy of not interfering in matters for collective bargaining. Beirne had said the union, representing 270,000 workers in the telephone industry, would be willing to pare down its demands if the fact-finders declared them too high.

The secretary said the non-intervention policy has worked "exceedingly well," and cited the "unusually low" loss of time due to strikes in recent years. "This record fully supports our conclusion that we can rely on labor and management to settle their differences at the bargaining table in a responsible manner," Mitchell said. The CWA plans to seek higher wages and longer vacations when contract talks with Southern Bell Telephone & Telegraph Co. begin later this month.

CWA, meeting in Chicago during the last week of February, agreed to ask a "substantial" wage hike without naming a definite figure. However, Beirne obtained approval of officials of 1,000 locals to submit wage demands to "a fact-finding board of eminent Americans." He then asked the Secretary of Labor to appoint the board.

CWA will begin negotiations in April in behalf of 3,000 Illinois Bell Telephone Co. toll operators. Negotiations with other segments of the telephone industry, including Western Electric Co., will be started at different times throughout the year.

Who can deny the warmth of Betty's smile? She is one of the many children served by Easter Seal gifts, which your contributions to the National Society for Crippled Children & Adults, 11 S. La Salle St., Chicago 3, Ill., make possible. Hopefully, she looks to tomorrow—without braces.

Joslyn Retires from Ill. Co.; Tremayne New Head

Harry A. Joslyn, president of the DeKalb-Ogle Telephone Co., Sycamore, Ill., announced his decision to retire from active management of the company at the Feb. 11 annual meeting of the stockholders. Mr. Joslyn plans to devote his time to personal activities but will continue his interest in the DeKalb-Ogle company as a director. The

H. A. JOSLYN

directors of the company elected S. F. Tremayne to succeed Mr. Joslyn as president and Daniel A. Schaefer as general manager.

Mr. Joslyn's career in the telephone industry began in 1910 as a "groundman" for the DeKalb County Tele-

S. F. TREMAYNE

phone Co. during his summer vacation from school. He later worked for a short time as a repairman at DeKalb, and in 1914 was employed by the Western Electric Co. He worked in the Hawthorne shops in connection with a student training program and then

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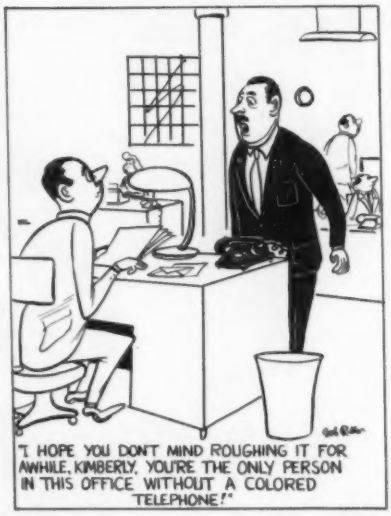
spent a year in the field installing switchboards. Leaving Western Electric in 1916, he went to work for the Chicago Telephone Co. After a year he returned to the DeKalb County Telephone Co. as local manager at Hinckley, Ill. As a member of the Army Signal Corps Reserve he was called to active duty in October 1917, serving overseas during World War I.

In May 1919 he resumed his telephone career as local manager at DeKalb. In 1927 he was elected secretary and general manager of the DeKalb-Ogle Telephone Co. which was formed in August 1926 by a consolidation of the DeKalb County and Rock River Telephone Cos. Mr. Joslyn became president and general manager in 1936, succeeding his father, James C. Joslyn, as president.

Under Mr. Joslyn's direction the company grew from 7900 telephones in 1936 to 23,383 in 1958 and in assets from $1,135,000 to $4,122,000. During most of his career, Mr. Joslyn was active in the Illinois Telephone Association, serving as director for 23 years and as president in 1942 and 1943.

Daniel A. Schaefer has been general manager of the DeKalb-Ogle company since March 1956, having joined the company in 1953. After graduation



from Purdue University, he was employed by Indiana Bell Telephone Co. for nine years, serving in the traffic and general engineering departments. He was on active duty with the Army Artillery in World War II and again during the Korean War, serving as a lieutenant colonel and battalion commander. Mr. Schaefer is a director of the Illinois Telephone Association.

Prior to becoming president of the DeKalb-Ogle company, Mr. Tremayne was with Illinois Bell Telephone Co. in Chicago, where he was employed for seven years in commercial, public relations, and traffic assignments, and was most recently plant security agent, chief special agent, and supervisor of claim adjustments. Mr. Tremayne is a law graduate of Washington University of St. Louis, Mo., and was an agent and supervisor for the Federal Bureau of Investigation for 10 years before entering the telephone business.

Signal Corps Appoints New Research Chief

Brig. Gen. Earle F. Cook has been appointed the next chief of the research and development division in the Office of the Chief Signal Officer in Washington, D. C., it was announced by Maj. Gen. J. D. O'Connell, Chief Signal Officer. He will report to his new assignment in May.

General Cook is currently the Commanding General of the U. S. Army Signal Engineering Laboratories at Fort Monmouth, N. J. He will succeed Brig. Gen. Richard J. Meyer, the present Chief of Research and Development who will be assigned to a logistics position with the U. S. Army, Europe.

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THE SUPERVISOR

Concluded from page 20

sonality and warmth of emotion, his insight into and understanding of human nature, together with his own experience and competence, are strong contributing factors to establishing high morale. No telephone supervisor should be immune to the challenge of morale building.

It is the responsibility of the telephone supervisor to plan, motivate, coordinate and control the efforts of his personnel towards a specific objective. The supervisor's skill in handling situations in which he and his staff can work and grow together play a most important role in strengthening morale.

One word of warning is perhaps in order. While it is surely true that morale is heightened if employes sense they are members of a team and their work is worthy of recognition and praise, the supervisor must understand that people change only as they can see reasons for change and understand the new approaches to solving old problems. Such growth will take time, require patience on the part of the supervisor and will vary with individuals.

The supervisors and the employes must understand and respect one another's points of view and levels of operation. Only as individual differences are respected and sincerely accepted by each member of the organization can the highest state of morale exist. This does not imply that the supervisor will sidestep issues and neglect to make difficult decisions.

These are high ideals, indeed, but like the stars, we never reach them but they guide us on our journey.

As Browning so aptly states, "Ah, but a man's reach should exceed his grasp, or what's a heaven for?"

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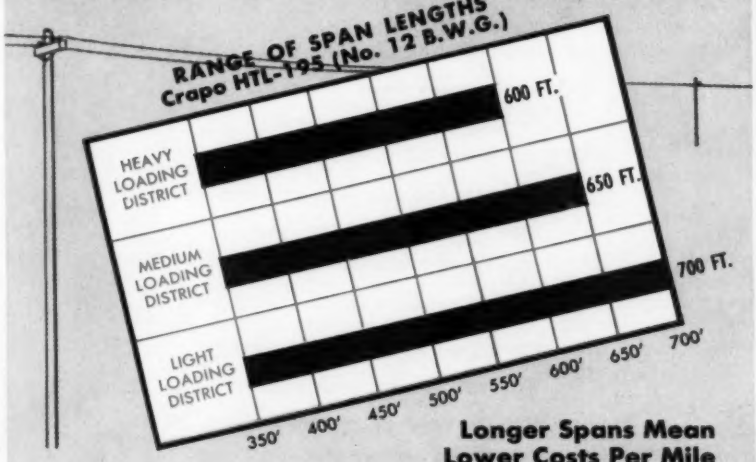

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You can cut the number of pole structures to a minimum when you use **Crapo** HTL-195 in building rural telephone lines. Extra long span construction, made possible by the high physical strength of this new wire, means marked savings in material and installation costs.

The voice transmission quality of **Crapo** HTL-195 is equal to that of **Crapo** HTL-135 and superior to older grades of ferrous wire.

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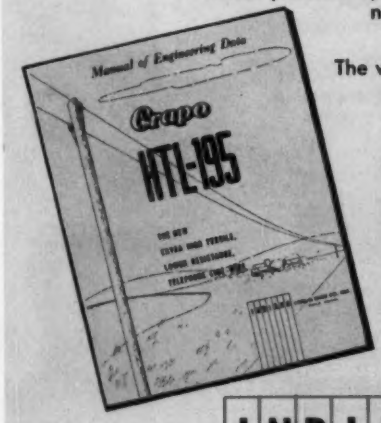

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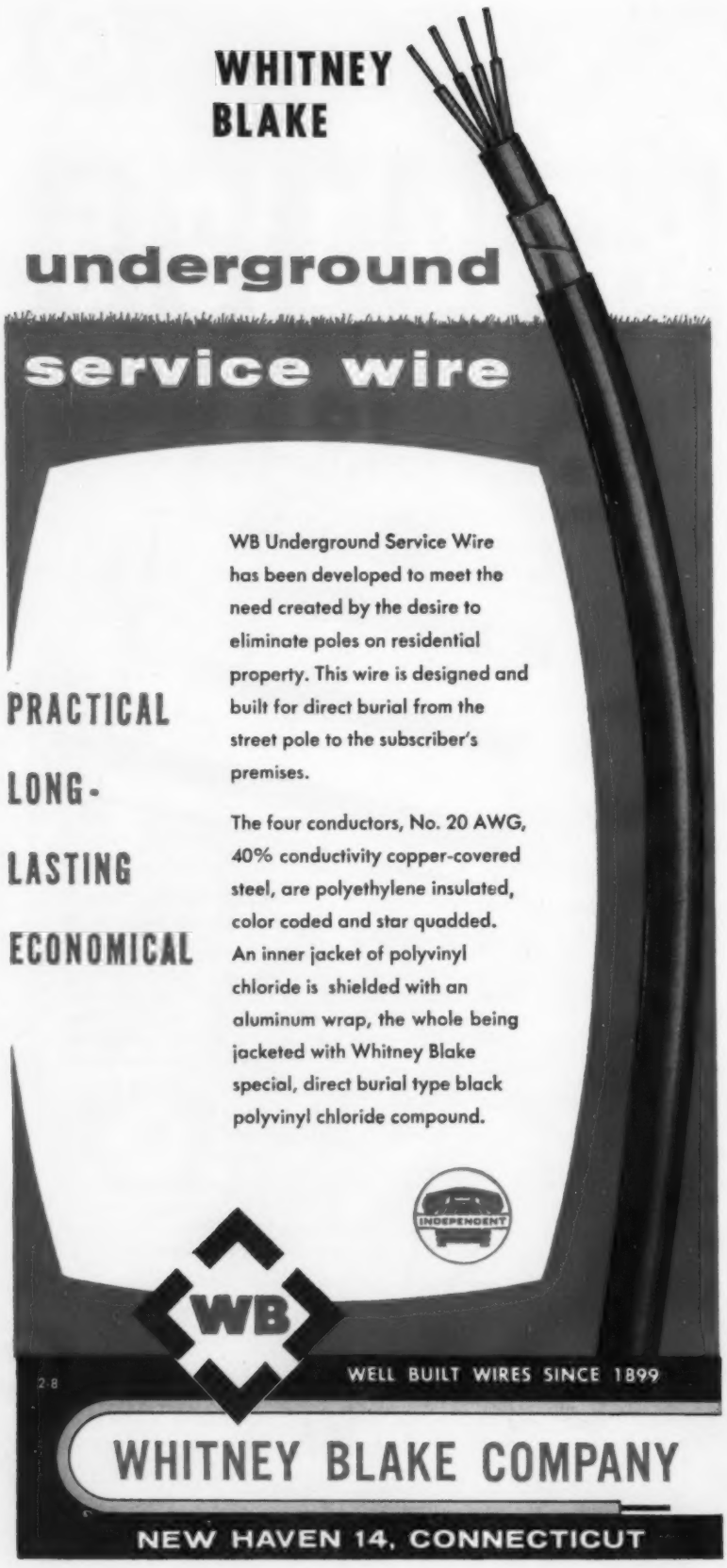
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Obituaries

H. W. HUBENTHAL, 83, former secretary of the Oklahoma Telephone Association, died on Feb. 28 in Oklahoma City.

Mr. Hubenthal served as secretary of the Oklahoma association from the time of its organization in 1935 until his retirement at the close of 1950. He was with the Oklahoma Utilities Association as secretary and engineer from about 1924 to 1935. Prior to that he was chief telephone engineer for the Oklahoma Corporation Commission.

"Hube," as he was known in the telephone industry, was born in Bremen, Germany, and came to the United States alone at the age of 13. He first lived in New York and later in Texas and Arkansas, going to Oklahoma about 45 years ago. He was an experienced seaman and his first contact with the telephone industry was in Texas where he observed a construction gang putting up some cable.

A rope line hanging from the top of a pole attracted his attention and he decided to apply for a job. Upon being asked by the foreman whether he could climb, he replied "sure" and started up the rope to demonstrate his ability. It was sufficient to get him his first telephone job and he was associated with the industry until his retirement.

He is survived by a daughter, Mrs. Harold Cackler, Oklahoma City, and a son, Harry K. of Fort Smith, Ark.; three grandchildren, five great-grandsons, and two sisters in Germany.

•

MRS. DOROTHY GREEN LELLO, wife of Herbert F. Lello, president of Automatic Electric Co., died on Mar. 1 at their home in Wheaton, Ill.

Mrs. Lello was a graduate of the University of Kansas and a member of the Gamma Phi Beta sorority.

Besides her husband, she is survived by two daughters, Julia Anne, a student at Denison University, Granville, O., and Carolyn Kay, now attending Wheaton High School. Other survivors include her mother, Mrs. William Green of Abilene, Kan.; a brother, William Green of Kansas City, Mo.; and two sisters, Mrs. William Lenhart of Trenton, Mo., and Mrs. C. Lucien Gray of Wichita, Kan.

OK Rate Raise In Ill.

The Illinois Commerce Commission on Mar. 7 authorized the Madison Telephone Co., Bethalto, to increase rates at its Hamel and Worden exchanges by $4,000 annually (TELEPHONY, Mar. 1, p. 48).

The finest in the world, but—

by John Voss

One of my favorite stories has to do with a big sales meeting held by a manufacturer of dog food.

The sales manager got up first to talk to his men. This sales manager was a dynamic sort of fellow like our own Tommy Thompson. He was famous for his pep talks. He really knew how to get an audience worked up.

He looked at his salesmen and suddenly burst out, "Who's the greatest little old dog food manufacturer in the world?"

In perfect unison the salesmen shouted, "Rover's!"

The S.M. went on. "Who pays the highest commissions in the business?" he roared.

"Rover's!" the men roared back.

"What's the finest, best-tasting, most nutritious dog food in the universe?"

"ROVER'S!"

The S.M. paused, leaned forward and pointed an accusing finger at the audience. *"Then why aren't you guys selling more of it?"*

For a moment there was absolute silence. Then up piped a voice from the rear.

"It's those darned dogs, chief. *They hate the stuff!"*

In my opinion this story has a lot of truth in it, and it points one of the sharpest morals in business today. Naturally, those of us who make and sell products—or provide services—do our very best to put out the finest possible products or services. We're intensely loyal to our Company and to the things it sells. But if we aren't careful, we can get carried away by our own enthusiasm.

Making the best product you can is fine. But no matter how satisfied *you* are with it, you might just as well be working in a vacuum if you don't make it the best you can from the *user's* standpoint.

At Stromberg-Carlson we try to keep this philosophy in front of us 100% of the time. We know we can turn out quality products. We have the manpower, the experience and the facilities to do it with. But we figure there's no point in even starting on a new piece of equipment before finding out if it's right for the customer.

Let's take a simple example. We make a 40-line dial PBX—the XY® F-40. We know it's as fine as anything you can get. But before we did anything about producing it, we made sure we got the answers to two basic questions: would it do the job for the subscriber who uses it; and would it be profitable for *you*, the independent operating company, to sell it. This is the basis on which we make the F-40 and every other piece of equipment that bears the Stromberg-Carlson label — from relays to central office switching systems.

In telecommunication equipment and telephone service—as in dog food—you're absolutely nowhere if you don't give the customer what's best for *him*.

John H Voss

Vice President and General Manager
Telecommunication Division

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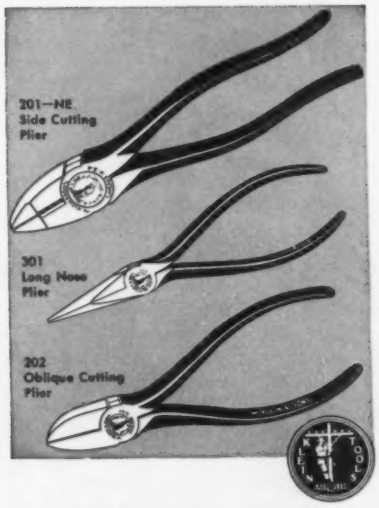

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POLE CLIMBING EQUIPMENT

Continued from page 28

ears, is necessary. Each step up or down the pole should be visualized in advance.

(2) Only the legs should be used for climbing. Any tendency to climb with the hands by "pulling up" the pole must be avoided; the hands and arms are used for balance only.

(3) Do not attempt to climb a pole directly behind another man, because he may slip, dislodge splinters, drop tools or material. It is safer to wait until the other man has reached his working point on the pole and has settled himself.

(4) When climbing past another working on the same pole, particular care should be taken to avoid dragging the gaffs across the other lineman's safety strap and possibly damaging it.

(5) Avoid any tendency to hurry when ascending or descending a pole. Hurry means taking chances which may cause an accident.

(6) When climbing, care should be taken to insert the gaff into sound wood only. Avoid old gaff marks, knots, loose wood, decayed spots, nails, ground wire, ground wire guard, etc.

(7) When necessary to climb an ice or sleet-covered pole, particular care should be taken to insert the climber gaff through the ice and firmly into the wood. Use the drier side of the pole for taking hold with the hands.

(8) Climbers should not be used on stepped poles where the work can be performed safely by standing on the steps.

(9) It is unsafe to use climbers on trees, or where they are liable to damage private property.

(10) Climbers should be removed while traveling on trucks or other conveyences to and from jobs.

(11) Climbers should not be worn when crossing fences or ditches, walking over embankments, or under any conditions which might result in personal injury.

(12) When climbing or working on a pole, care should be taken not to permit the arms, legs, or body, to come in contact with foreign electrical circuits or electric power construction.

(13) There are leg muscles, wrist muscles, and hand muscles used when climbing poles that are not used in just the same way in the performance of other work. Therefore, becoming overtired due to muscular fatigue, as the result of pole climbing, should be avoided.

(14) When climbers are not in use, carried on trucks, stored in tool boxes, etc., an appropriate removable guard should be fitted over the gaff to protect it from damage as well as preventing injury to the pad and straps of other climbers stored in the same place. Several types of gaff guards are available.

(15) Climber gaffs should never be used as a pry.

(16) Clothing worn when climbing and working on poles should permit free movement of the legs, hips and arms. There should be no binding or restrictions which may contribute to an accident. Wearing gauntlet type gloves which permit free movement of the fingers will protect the hands from splinters, excess pole preservative, and keep the inside of the wrists from rubbing against the pole.

(17) Where there is a possibility of foreign substances, wire ends, tree branches, smoke, chemical fumes, etc., coming in contact with the eyes, protect the eyes by wearing safety glasses.

The condition of climbers, pads, and leg and ankle straps should always be maintained within the requirements of the telephone company's safety practices by being regularly inspected. The important conditions to look for are:

(1) Climber gaff improperly shaped, fractured, or starting of a fracture; loose, dull, or too short (that is, less than 1⅛ inches long measured along inner surface).

(2) Difference in length greater than ⅛ inch between the gaffs of a pair of climbers. *Fig. 7* shows a perfectly shaped gaff. *Fig. 8* shows the effect of a dull gaff on a pole, and *Fig. 9* shows effect when gaff is too short. Certain makes of climbers are equipped with replaceable gaffs, thus simplifying the disposal of defective gaffs found on inspection.

(3) Climber leg iron scratched, scored, fractured or starting to fracture.

(4) Climber leg and ankle strap loops loose or broken.

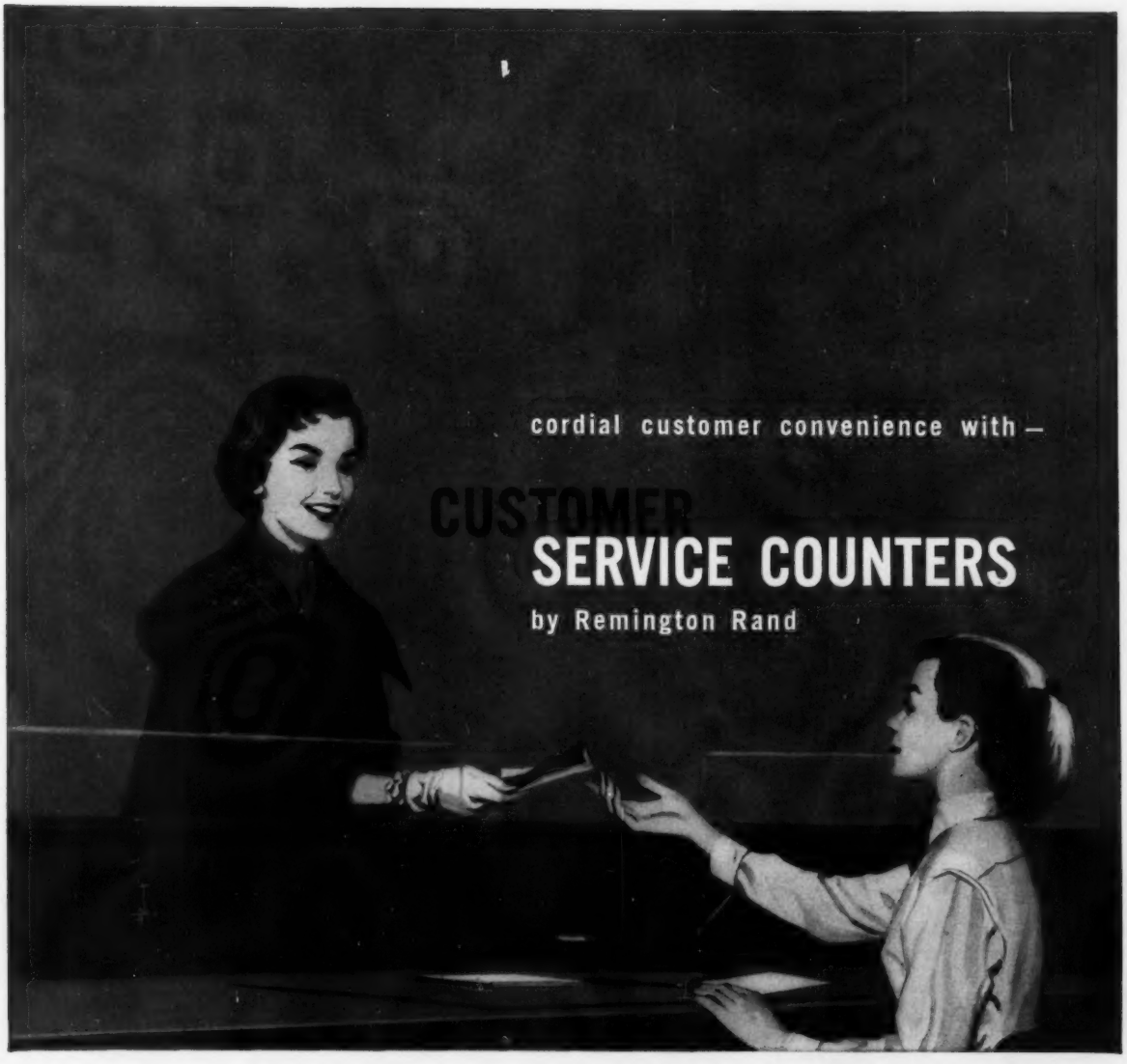
(5) Strap loops or climber pads cracked, cut, broken or torn.

(6) Leg and ankle straps worn too thin, nicked, cut, particularly cuts and tears along the edges of the straps that would affect the strength of the strap.

(7) Holes for tongue of strap buckle enlarged excessively. Avoid weakening leg and ankle straps by enlarging buckle holes or by punching extra holes.

(8) Any dirt, grease, chemicals, or other substances, which have collected on the pads or straps should be promptly removed.

(9) Pads and straps should be pli-



Now you can gain *all* the advantages of combining cashiering and recordkeeping functions in one location, with the new specially designed REMINGTON RAND® Customer Service Counter. One sectional counter unit accommodates all facilities and records for these operations... for the larger office several units can be joined together in perfect harmony.

Designed to eliminate "standing" cashiering, the counter height permits the clerk to serve from a seated position facing the customer. Facilities for a normal cashiering operation are within arm's reach. As a result customers are served more cordially, promptly and efficiently.

Most important, full time point-of-use fire protection for your vital records is now available in desk-height, certified, insulated counter units. For an estimate on a Customer Service Counter installation tailored to your specific requirements, contact your local Remington Rand representative. For FREE descriptive folder SC764 write today to Room 1382, 315 Fourth Ave., New York 10.

Note the compact, efficient and comfortable working area side of the Customer Service Counters, pictured in the above typical Telephone Company installation. Three units combine protection and convenience for operating records and cash.

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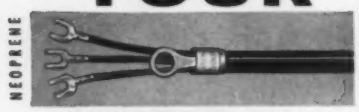
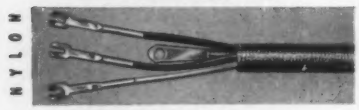
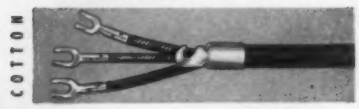


BEST



BUY!



Are you familiar with the features of these fine cords?

NEOPRENE covered cords are a highly serviceable cord, extensively used in a wide variety of services. They are moisture and grease proof . . . easy to keep clean.

NYLON covered cords are a relatively new development in telephone cords. Their fine smooth texture makes them the preferred cords for switchboard use. They give long service. Preferred by operators because of their fast, easy handling.

COTTON cords are in standard use everywhere. Their fine woven wrap makes them very serviceable for all around purposes.

Take your choice—Neoprene, Nylon or Cotton. They're all high quality cords made in accordance with Runzel high standard of quality. We carry a large stock of cords for every purpose.

Our geographical location means QUICK SERVICE.

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Cord and Wire Co.
4723 W. MONTROSE AVE.
CHICAGO 41, ILL.

able. If they are hard and dry, an approved dressing should be used to soften them.

Climbers, pads, and leg and ankle straps which have developed dangerous defects found on inspection should be immediately withheld from further use until they are either repaired or replaced. Proper maintenance of climbers, pads, and leg and ankle straps not only prolongs their useful life, but assures their working safely as well. Lack of proper care invites accidents.

(To be continued)

Engineering Group Asks Full Support of Research

American engineering colleges—already carrying on nearly half of the government-sponsored basic research in engineering now underway in this nation—has called for expanded national support for fundamental research and promised to assume even greater responsibilities for its success.

In a comprehensive summary of the status and needs of research in engineering colleges, The American Society for Engineering Education said recently:

(1) Engineering research valued at 100 million dollars a year is now in progress on college campuses.

(2) Another 10 million dollars could be accommodated immediately with present staff.

(3) The progress of engineering in future years in the United States requires a greatly expanded program of basic research today in all technical fields.

(4) Increased support of research in educational institutions is vital for the professional development of the faculties, for new knowledge which will result, and for the qualified students it will help train.

(5) Budget uncertainties of late 1957 damaged the "good relationships and the spirit of mutual confidence" which had been built up between the Defense Department and educational institutions. Many cuts remain unrestored, and some new programs are still uncertain.

Proclaim Telephone Pioneer Week in Ohio

The week of March 3 to 9 was set aside in a proclamation by Ohio Gov. C. William O'Neill as Telephone Pioneer Week, J. Warren Safford, president of the Buckeye State chapter of the Independent Telephone Pioneer Association announced.

Mr. Safford stated that Ohio's Independent telephone career people are cooperating with the Kingsbury and Kilgore chapters of the Telephone Pioneers of America in honoring Ohio's men and women who have been employed 15 or more years in the telephone industry.

SW Bell Company Gets Raise In Lockney, Tex.

Southwestern Bell Telephone Co. will raise its rates at Lockney, Tex., effective with the billing on July 29. The city council voted to grant the raise at a recent meeting, it was reported on Feb. 22.

The new rates will be: One-party business, $10; one-party residence, $5.60; two-party residence, $4.25; rural business, $6.50.

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Do you bill 500 . . . 5,000 . . . or 50,000 toll calls a month? Then take a tip from the more than 500 telephone companies, large and small, who use the Recordak Toll Billing System. They have found a simple way to halve their billing costs!

Here's all you do—just add up toll ticket charges . . . list total and tax on bill . . . then photograph both tickets and bill with the Recordak Junior Microfilmer. Clip them together and send on to subscriber. That's all there is to it—the job is done in a fraction of the time previously needed.

In one stroke, you've eliminated hours of transcription work . . . enabled each clerk to handle four times as many accounts . . . reduced the chance for error to strictest minimum. Subscribers' questions are answered in advance by original toll tickets. Charges are recalled readily . . . bills are paid without fuss or delay!

Prices start at a low $550 for the Recordak Junior Microfilmer (with built-in film reader). Also available on low-cost monthly rental plan. Mail coupon today for further information and copies of actual case histories.

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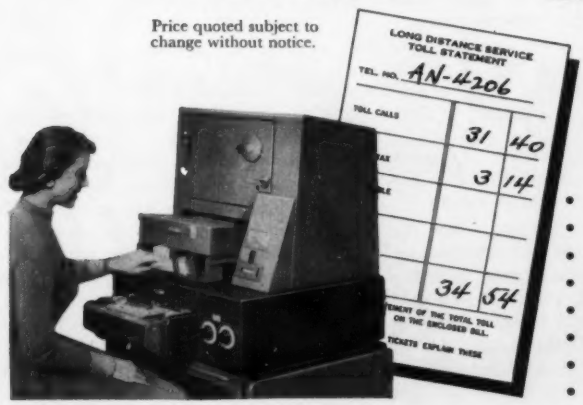
Price quoted subject to change without notice.



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push it under streets, roads, tracks, lawns with a timesaving

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Speed underground piping jobs this way. GREENLEE Pusher is one-man-operated (by hand or with power pump), portable, simple to set up and use. No tearing up of pavement, floors, lawns . . . does away with extensive ditching, tunneling, backfilling, repaving. GREENLEE Pusher cuts job time to a fraction . . . often pays for itself on first job.

Two feet per minute average pushing time

GREENLEE Pushers are available in two sizes: No. 790 for ¾" to 4" pipe . . . No. 795 for pipe over 4", concrete sewer pipe, large ducts. Average performance of No. 790, shown above with power pump, two feet per minute. Write for literature.

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2063 Columbia Avenue • Rockford, Illinois

ECONOMIC SELECTION STUDIES

Concluded from page 25

State taxes may consist of property tax, franchise tax, business activities tax, sales tax, etc. The total of these taxes is expressed as a percentage of the total company investment figure. Being thus expressed, the state tax percentage may be applied against the first cost or investment in outside plant, equipment, buildings, or any other plant item, to determine this portion of the annual charges.

In some states, a *local tax* is imposed by municipalities in addition to the state tax. Where this occurs, this tax should also be included among the annual charges, as a percentage of the investment.

Income taxes are levied by the federal government and by some states.

Federal income tax is based upon net income, i.e., gross income less deductions. Some of these deductions are interest on the bond portion of the company's financing, maintenance expense, other taxes paid to municipalities and to state and federal governments. Another deduction is depreciation.

In providing telephone service to subscribers, each type of plant, such as building, switching equipment, cable, wire, poles, etc., can be said to contribute its share toward supplying the service for which the subscriber pays. Each item of plant is responsible for a part of the income of the company, and should, therefore, bear a portion of the federal income tax. This treatment of income tax is applicable to certain Economic Selection Studies, as will be explained below.

If the average or expected service life of a particular type of plant is known, so that both the Straight Line Depreciation and the Annuity Depreciation can be determined, the federal income tax applicable to this type of plant can be found for any net income. For any particular type of plant, then, Federal income tax (FIT) =

$$\frac{\text{FIT rate}}{\text{100\%-FIT rate}} \times P \times (\text{Annuity Depreciation} + \text{cost of money} - \text{straight line depreciation})$$

where P is the proportion of equity (stock dividend) money included in the cost of money, as discussed below.

In the financial structure of the company, if the debt capital (bonds) to equity capital (stock) ratio is of the order of 1/3 to 2/3, $33 would be debt capital and $67 would be equity capital for every $100 of the total. At an assumed interest rate of 3 per cent on bonds, the interest portion of the cost of money would be $33 x .03 = $.99. If the cost of money is 7 per cent, it would amount to $100 x .07 = $7.00. Then the equity (stock dividend) portion of the cost of money would be $7.00 — $.99 = $6.01. In this example, the proportion (P) of equity money included in the cost of money is $6.01 ÷ $7.00 = 86 per cent.

Under the conditions, then, of the total federal income tax rate being 52 per cent of the net income and when P = 86 per cent, the federal income tax on individual items of plant is

$$\text{FIT per cent} = \frac{.52}{1-.52} \times .86 \times (\text{annuity depreciation \% + cost of money \% — straight line depreciation \%}).$$

If the depreciation allotments are made annually, the Straight Line Depreciation per cent will be on an annual basis. If the allotments are made monthly, then a monthly straight line depreciation per cent should be used. See *Fig. 1* and *Tables 1 to 6* inclusive.

Where state income tax is involved, similar methods are involved. Any pecularities in the manner in which the tax base is determined, or the tax itself is applied, must be taken into account.

2.325 *Insurance* is the cost of premiums on insurance policies. This annual charge is omitted on plant in some companies, as no insurance is carried on it. However, among companies where insurance is applicable, it should be included as one of the annual charges.

(To Be Continued)

Older Workers

"Statistics are working in favor of older employes in industry and the premise that they are less productive is being continually disproved. The *Industrial Bulletin*, published by the New York State Dept. of Labor, opines that 'output man-hours show little significant variation among age groups.' The magazine gives figures to show that older workers have a better attendance record than younger employes and that older workers have fewer accidents on the job. Hiring older workers is good sound business practice. Their experience gained through the years is indispensable."—*Catskill (N. Y.) Enterprise.*

Have You Seen the New Exide-Tytex Battery?

Three important design features for longer life, greater economy, and superior performance

1 Suspended plates Instead of resting on the bottom of the jar, plates are suspended from ledges molded into the jar walls. This means new freedom from cover leaks and sediment shorts—hence longer life and more dependable performance.

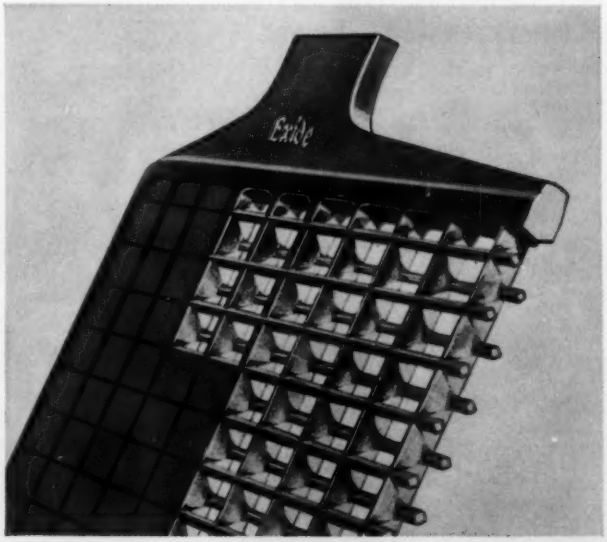
2 Plastic jar Not just any kind of plastic, but a special one proved chemically stable and impact resistant. Saves weight and space.

You may know the Exide-Tytex as a superior pasted plate battery. Now Exide has made it even better. Now you get top battery economy with minimum investment, plus even greater battery life potential and dependability.

Look at the new improvements: suspended plates, plastic jar, Silvium grids. And, of course, it has the same powerful active material and quality construction standard in Exide batteries. Among pasted plate telephone batteries, the Exide-Tytex can't be matched. This is Exide's way of insuring that for every application, you continue to get the best value possible in batteries with the Exide brand.

Exide batteries for telephone service are available in calcium alloy types in a range of sizes from 50 to 1680 amp-hr capacity.

3 Silvium grids Exide's patented grid alloy. Up to 100% more corrosion resistant than commonly used alloys. Prolongs battery life. Silvium can be used only in Exide batteries.



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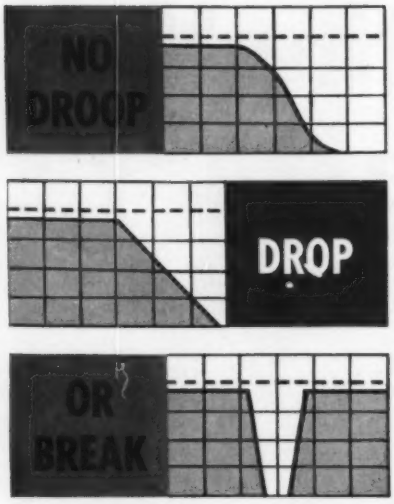

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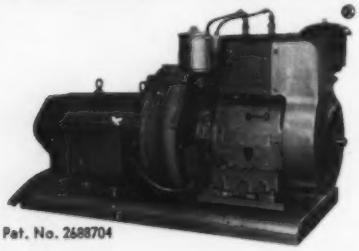

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OUTSIDE PLANT PLANNING

Continued from page 22

shown in *Fig. 1* are often parallel to the long dimension of the blocks, making it inconvenient and costly to provide service to the distributing plant. Some areas cannot be served except by long wire or cable facilities. One of the feeder routes is shown passing along a side of the cemetery, which, although heavily populated, produces no telephone demand.

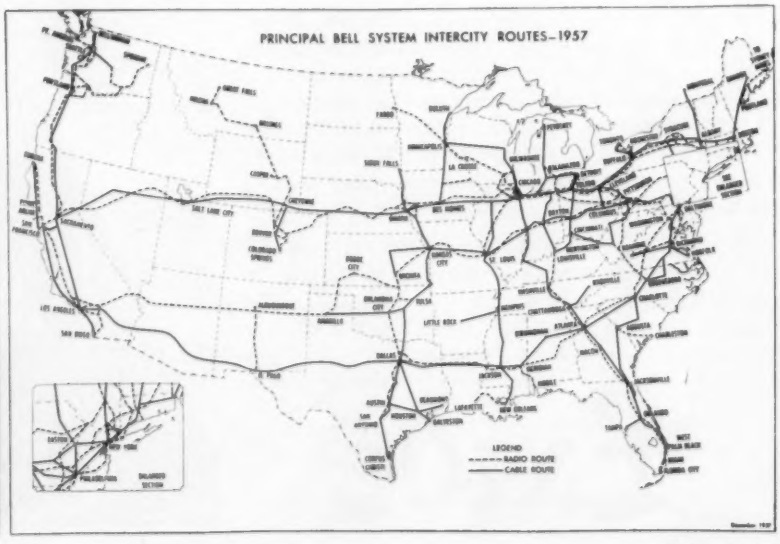
In contrast to the above, *Fig. 2*, covering the same municipality, shows no feeder cable routes on Main or Principal Streets, but on the paralleling secondary streets. As the cable cross-section is thus also divided between the two adjacent streets, instead of being concentrated on the heavy traffic thoroughfares, little or no underground plant may be required. This arrangement also lends itself to the establishment of small secondary feeders across the short dimension of the blocks on alternate streets, almost eliminating the necessity for distributing cable or long drop wire runs. This also can be a factor in reducing wire and aerial cable maintenance expense.

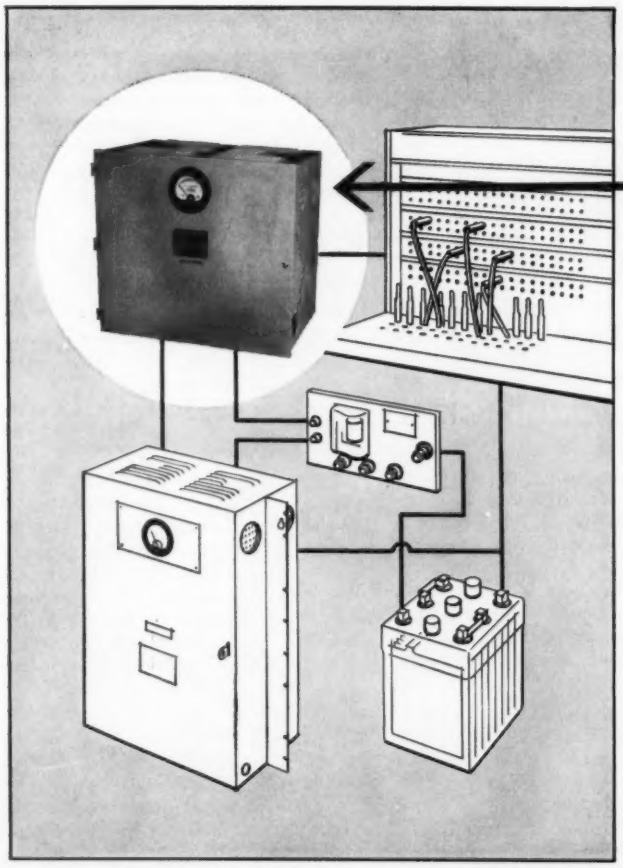
Feeder cable routes may be affected to some extent by public or political opinions, and some adjustments may have to be made to satisfy adverse reactions.

It must be kept in mind that fundamental plans are concerned with the future. They attempt to work the existing plant into an economical arrangement which will provide adequate routes into areas of future telephone development, according to a design which must combine geography, feasibility, and economics as principal ingredients. The plan must be economic within the limits of the intangibles of geography, ability to construct, the layout of streets, block accessibility, etc. It must also be sufficiently flexible so that revisions may be made when required by new real estate developments or public improvements in the area.

At the time the plan is designed, no attempt is made to determine how many ducts will be required ultimately along a path where conduit might be placed at some future date. Development in the areas served by the route may not come up to predictions, or it may exceed expectations. In either case, the number of ducts which might be specified now for placement two, five, or 10 years hence will, in all probability, not be appropriate at that time. It is not a function of fundamental plans to show how many ducts should be placed at some future date. Fundamental plans indicate where feeder facilities should be located, whether aerial or underground. How many ducts to place can best be answered when the time comes to place them, and is a function of the expected frequency of duct occupancy.

When aerial feeders are placed, it is expected underground conduit may follow the same route at some future time. This practice allows distribution cables to be cut into the underground to relieve aerial feeders for further extension. However, aerial feeders may rightly be placed within the block rather than on the street to take advantage of an existing pole line. If underground conduit is later placed, it would be located in the street, not in the alley, easement, or along a rear lot line. On the fundamental plan map,





SYSTEM DIAGRAM shows inter-connection of Auxiliary Charger, Recticharger, control relay and load. Auxiliary Charger unit fits into rack with Recticharger. Units are available for adding from 3 to 25 amps to Recticharger capacity.

FOR PEAK LOADS

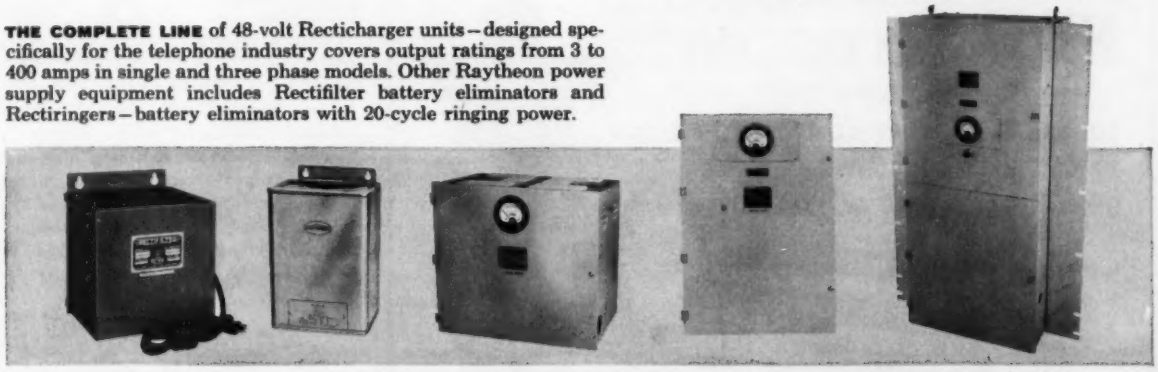
New Raytheon Auxiliary Charger adds Recticharger® load capacity

Here is an efficient and economical way to expand the capacity to your Recticharger. With the help of a Raytheon Auxiliary Charger, your present installation handles the additional load during peak demand periods and takes care of "borderline loading"—*too high* for your Recticharger but *too low* to warrant purchase of a higher capacity charger.

The Raytheon Auxiliary Charger—connected through a Raytheon current sensitive control relay—*cuts in* when demand exceeds the maximum current capacity of the Recticharger . . . drops out when the load falls within the Recticharger rating.

The new Auxiliary Charger is the latest of Raytheon advances in telephone power supply equipment. *Please write directly to Raytheon or ask your Telephone Supply man for details.*

THE COMPLETE LINE of 48-volt Recticharger units—designed specifically for the telephone industry covers output ratings from 3 to 400 amps in single and three phase models. Other Raytheon power supply equipment includes Rectifilter battery eliminators and Rectiringers—battery eliminators with 20-cycle ringing power.



RAYTHEON RECTICHARGER®

RAYTHEON MANUFACTURING COMPANY
Commercial Equipment Division
Waltham 54, Massachusetts

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the symbol will indicate the location of the feeder route as being on the street, even though the feeder may be placed on the paralleling pole line within the block.

It must be emphasized that the views required for successful fundamental planning are not those of yesterday nor of today, but of tomorrow. A long-range picture of the requirements of the future must always be kept in mind in fundamental plan work, for the cables and conduit placed as a result of the plan may last a lifetime or more, and the effect upon the future of what is done now cannot be underestimated. The best possible job now may be none too good.

Graybar Appoints Two To Manager Posts

H. Bryson has been appointed as manager at Indianapolis for the Graybar Electric Co., Inc., effective Mar. 16. The appointment was announced by C. E. Kirkpatrick, central district manager. In another Graybar managerial appointment, A. C. Larson became manager at Springfield, Ill., effective Mar. 1. The appointment was announced by M. P. Johns, Mississippi Valley district manager.

Ansonia Wire & Cable Realigns Sales Force

Extensive realignment of the sales strength of the Ansonia Wire & Cable Co. is announced by A. J. W. Novak, the company's general sales manager. The extensive new appointments, Mr. Novak states, stem from Ansonia's expansion into a variety of marketing fields in each of which specialized servicing is required.

According to the new table of organization, John L. Marsh becomes market specialist for the power utility industry. Mr. Marsh will be responsible for cultivation of key industry contacts and for determination of product requirements.

Field representative appointments announced by Mr. Novak include assignment of Raymond T. Blythe to New England, New York, and Pennsylvania; Kenneth C. Gillette to Ohio, Michigan, Indiana, and Illinois; Ralph Engsberg to Wisconsin, Minnesota, Nebraska, and Iowa; and William C. Clifford to Missouri, Kansas, Arkansas, and Oklahoma.

In their individual territories, each field representative will be responsible for servicing Ansonia's Independent telephone accounts and for liaison with the company's distributors.

Tilden E. Thompson, in his post as assistant sales manager, will supervise all home office sales activities, in addition to his general sales responsibilities. Fred Corcoran, office manager for the sales department, will continue to serve in that capacity at the Ashton, R. I. plant.

Design Service Opens Office in Indiana

Design Service Co. of New York announces the opening of a new regional office in Evansville, Ind. It is located at 11 N. W. Third St. William F. Davidson has been appointed as the resident technical coordinator and representative for the area.

This office will be staffed initially by members of Design Service company's telephone enginering division. This division provides the specialized services for design and layout required for the rehabilitation and conversion of telephone plant to automatic operation. The company offers specialists for every major phase of engineering, including preparation of commercial surveys, and obtaining data concerning growth, economic and cultural factors. These factors are then projected into anticipated growth and service requirements.

Also provided are services for the layout, design, and solution of technical problems and architectural and mechanical requirements, and for the development and publication of illustrated instruction manuals.

Auto Seat Belts

". . . experts say that seat belts really do make driving safer. Cornell University's committee on transportation safety research has this to say: 'From more than 5,000 case histories of injury-producing accidents, we have reached conclusions which should remove all doubt as to the effectiveness of belts in minimizing injuries in automobile accidents. In actual use, properly designed and installed seat belts will increase a motorist's chance of escaping injury by nearly 60 per cent.'" —*Boone (Ia.) News Republican.*

U. S. Plans Nepal Network

The United States will build a $1,350,000 telecommunication network in Nepal this year, Reuters reported on Feb. 22. Speaking a press conference, R. E. McCoy, the United States operations mission's program chief, said the project called for the installation of a 1,500-line telephone exchange in Katmandu and 56 radio-reception and transmission stations in the country.

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CONCRETE, MASONRY, COMPOSITION BLOCK, BRICK...EVEN STEEL!...without DRILLING, PLUGGING OR EXPLOSIVES!

ALL YOU NEED IS 1. A HAMMER

2. THE HILTI T-25H DRIVE TOOL

3. HILTI "CONIC" FASTENERS

and you'll get 85% more holding power with minimum penetration to safely and economically fasten cable-clamps, wire-ties, metal mouldings, wire-clasps, drive-rings, bridle-rings, back-boards, terminals, etc.

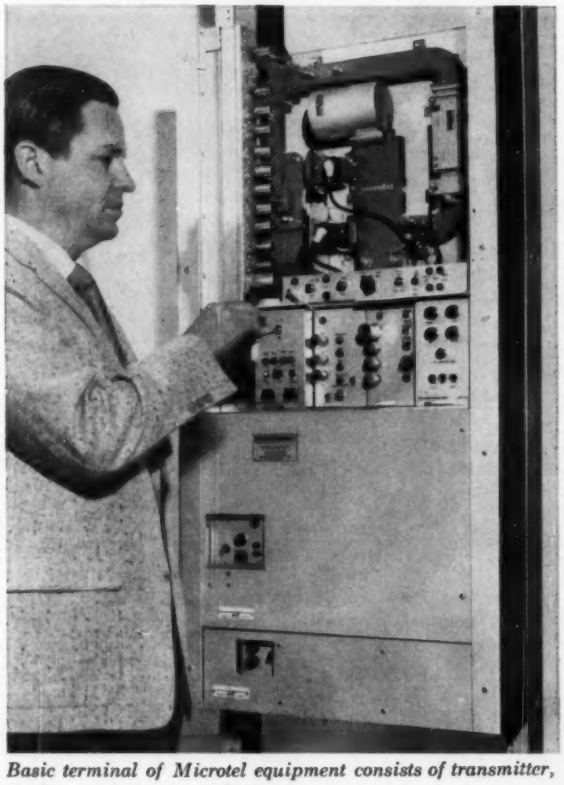
Send for FREE literature on the HILTI system

HILTI RAPID FASTENING SYSTEMS, INC.
55 Vandam St., New York 13, N.Y. · AL 5-2292

FOR FASTENINGS THAT HOLD—HIT IT WITH HILTI!

Expand toll circuits this fast economical way—

microtel



Basic terminal of Microtel equipment consists of transmitter, receiver, and power supplies.

NEW LENKURT microwave system designed for telephone use

Microtel Type 74A equipment operates in the 5925-6425 mc common carrier band. This new system is clean in design, highly reliable, and so flexible it meets the needs of telephone companies of all sizes.

In its simplest form, a Microtel terminal consists of a microwave-frequency waveguide assembly, intermediate-frequency amplifier, four plug-in units for input and output circuits, power distribution, and alarms and system supervision. All plug-in units are similar to Lenkurt's 45-class equipment, simplifying routine maintenance and inspection.

Like Lenkurt 45-class carrier equipment, Microtel is easy to expand. A system installed initially with only a few carrier channels, can be expanded economically to a high-density inter-city system. With 8 transmitters and receivers operating over a common path, a system can handle up to 1920 voice channels, plus 128 or more supervisory, remote control, or telemetering channels.

FEATURES:

- ***Power options***—Operates from standard office battery supplies or from 115-volt a-c mains.
- ***Ease of installation***—Standard 19-inch rack mounting; compact plug-in construction; space saving, back-to-back installations.
- ***Ease of maintenance***—Components accessible from front; built-in test facilities.
- ***Standby flexibility***—Frequency diversity or space diversity; combining or transfer facilities.
- ***Economical expansion***—With r-f circulators, 2, 3, or 4 terminals can be added to same antenna system.
- ***System length***—Up to 300 miles with medium loading and multiple repeater points.
- ***Repeaters***—Back-to-back terminal equipment permits dropping and reinserting of channel groups; automatic switching permits unattended operation.

New, *illustrated booklet includes Microtel technical summary, application ideas, additional helpful information. Phone Fillmore 5-7111, or write today for your copy. Automatic Electric Sales Corporation, Northlake, Illinois. In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto. Offices in principal cities.*

AUTOMATIC ELECTRIC

A member of the General Telephone System—
One of America's great communications systems

GENERAL TELEPHONE SYSTEM

Two companies find three-wheel Trucksters handy vehicles. Lincoln (Neb.) Telephone & Telegraph Co. uses them for outdoor booth maintenance (above) and Pacific Telephone & Telegraph Co. has a fleet of six for new installation work (left).

Three-Wheel Trucksters Found to Be Handy Vehicles

Use of the Cushman 780 Trucksters, a light, three-wheel vehicle, is increasing in the telephone industry.

Among the companies which have most recently added Trucksters to their fleets are the Lincoln (Neb.) Telephone & Telegraph Co. and the Pacific Telephone & Telegraph Co. of southern California.

The Cushman Motor Works, Inc. of Lincoln, Neb., manufacturer of the Truckster, originated the immediately-popular two-wheel motor scooters more than 20 years ago. The Truckster, introduced five years ago, is a departure from the "scooter" principal in that it employs an automotive-type transmission, clutch and differential. It is powered by a 7.95 hp Cushman Husky engine and has an 800-pound payload capacity in its rear-mounted pick-up box.

The company points out that features of the Truckster are its low original cost, low operating and maintenance cost and its maneuverability and versatility.

The Pacific Telephone & Telegraph Co. uses a fleet of six Trucksters for new installation work. They are equipped with covered box, back rest for the driver, windshield and electric starter, the latter optional equipment.

The Lincoln Telephone & Telegraph Co. uses two Trucksters as a teletype repair service vehicle and as an outside booth maintenance machine. They are equipped with covered rear boxes and (optional) fiber glass cabs with side curtains.

New York Company Praised For Modernizing Directory

When the Chenango & Unadilla Telephone Corp., Norwich, N. Y., recently cut the width of its telephone directory pages by nearly half, and reduced the old three columns-per-page to two, the company drew some editorial applause for the move from the Sidney (N. Y.) *Record-Enterprise*. (Sidney is one of the Chenango & Unadilla company's exchanges.)

W. S. Kingman, executive vice president of the C&U company, reports that the company had secured a rate increase shortly before issuing the new directories, and thus drew a lament from the author of the editorial, Guy K. Weeden, along with the compliments on the directory. Mr. Weeden wrote:

> *"Alexander Graham Bell*
> *Made it possible to tell*
> *How we feel—where we are*
> *Whether we are near or far.*

"The newest edition of the telephone directory, just issued, breaks with an established custom in the matter of size and shape. At first touch it seems rather teeny-weeny, giving the impression that there are fewer telephone numbers in it. Actually this is not the case; a quick check shows that the local listings have really increased.

"The pages, a bit more than half their former size, each contain two columns of names instead of three. It is nice to assume that someone has made a study and found that this new size and arrangement has advantages—of which some, I hope, are for the user.

"Because of the constant use we give these books they will soon seem as familiar as the old size. A few years ago our dollar bills were made much smaller but we didn't mind until we discovered how much less they will buy!

"But this startling change in directory size has disappointed me. The rate for telephone service has been constantly increased . . . a new raise took effect last month. I still have the same old telephone that was installed in 1940 and it doesn't seem to do any different or better than when the rates were lower!

"So I had sort of hoped that maybe I would get a new directory that would indicate an appreciation of the increased contribution, such as a leather-bound, gilt edged one, printed on parchment. But it now appears they are going to use my money for some other purpose.

"From the time when we aroused 'Central' by winding a crank on the side of a wall-phone to using a dial to obtain any number we may want there has been a big change.

"It seems that the telephone business has been one of the earliest to use 'automation,' the process of making machines that take over jobs formerly requiring a bit of thinking.

"Today we rather expect to be connected almost immediately when making any long distance call; the local operator can dial any telephone in many distant towns and cities right from her own switchboard.

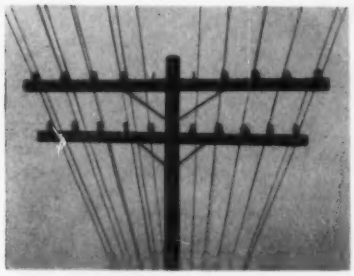
"We are so accustomed to the dial-tone that if we should hear, instead, a voice saying, 'Number please,' we would be a bit flabbergasted and we immediately consider a town without dial telephones is a little out-of-date."

Foolish Causes

"Every absurdity has a champion to defend it."—GOLDSMITH.

SUTTLE SUPPLY LINES

SUTTLE — Suppliers of Equipment to Telephone Men — Since 1910



SHIPPED FROM 6 VANTAGE POINTS

Manufactured by AMERICAN CROSS-ARM to meet full NELA and REA specifications, all arms are clear grade and available in Douglas fir, yellow pine and cypress. Regular telephone pony-size arms are stocked in 4, 6, 8 and 10-pin sizes, as well as a special 10-pin arm with wide spacing in the center. SUTTLE also stocks the "REA type" dead-end arm drilled for 10 insulated fork brackets. Call Lawrenceville, Ill. 782 for prompt delivery.

ERICOFON EXTENSIONS HAVE WIDE APPEAL

Extension installations mean added revenue and NORTH ELECTRIC has the extension telephone with the greatest sales appeal of any unit. Truly, the ERICOFON is the extension that everyone wants. The one-piece ERICOFON is balanced so that holding it is virtually effortless. Available immediately and in quantity from SUTTLE, in your choice of red, ivory, green, blue, and light and dark gray. Use SUTTLE's S.E. 283 plug and S.E. 404 jack with ERICOFON. In stock at Lawrenceville.

EVERYTHING IN TELEPHONE PRINTING

SUTTLE has the experience and the equipment to give you the finest quality Independent Telephone Company forms and directories at a price which is right. Everything you need—from directories to standard toll tickets—you can get on one order form when you order from SUTTLE. Check our low prices on standard forms. For real savings, let us quote you on your directories. Printers to Telephone Men — *Since 1910.*

NEOPRENE JACKET FOR LONGER LIFE

DIAMOND'S Parallel Reinforced-Neoprene Telephone Drop Wire installations cost less in the long run. Careful inspection, in the plant and in field tests, helps provide the high quality wire needed for telephone work. The Neoprene jacket is resistant to abrasion, cutting, sunlight, ozone, weather, oil, grease, aging, and oxidation. Before ordering any insulated telephone wire, check SUTTLE's prices — *first.*

SIMPLE TO INSTALL THIS NON-RUSTING PROTECTOR

The RELIABLE 2000 Series Station Protector provides excellent protection against static and crosses with electric circuits. High quality Neoprene base has wire entrance sealing slots; weather- and insect-tight cover. Unnecessary to remove fuses or bracket to wire and mount protector. Clearly marked binding posts are on side opposite fuses. Fuse mount is reversible.

FOR CABLE RELIEF, TEMPORARY SERVICE

Fast, low cost construction is possible with ANSONIA Lightweight Rural Distribution Wire. Has plastic-insulated #19 or #22 A.W.G. soft copper conductors in color-coded pairs cabled around a polyethylene-insulated .109 high-strength galvanized steel support wire. Each conductor pair has a controlled different length twist to avoid cross-talk. Breaking strength of 1800 pounds makes it ideal for temporary service or cable relief. Check SUTTLE's quote on your needs.

Manufacturers, suppliers, and printers to Telephone Men

For further information, specifications or quotations on these telephone supplies— write, wire or telephone—

SUTTLE EQUIPMENT CORPORATION

LAWRENCEVILLE, ILLINOIS — PHONE: LAWRENCEVILLE 782

Frank R. Kasper, Inside Sales—Atlanta, has a peach of an idea.

He has "Georgia" on his mind!

Everything's fine along Peachtree Street and across the Peach State, reports Frank Kasper of the Stromberg-Carlson branch office down in Atlanta.

Frank and his fellow co-workers aren't going out on a limb when they express satisfaction with your acceptance of construction and maintenance supplies distributed by Stromberg-Carlson.

In Georgia and elsewhere you're responding not only to the quality of the supplies, but to the way they're distributed. We spare no effort to give you *fast* service (overnight delivery to many locations on items carried in stock); *personalized* service (careful attention to your every need); *complete* service (no order is too large or too small). We try to stock the important items required for outside plant construction, but if you want "another brand" or some specialty item, you can depend on us to get it for you—fast—it's all part of our personalized expediting service.

And here's an important plus: a very real part of our earnings from your supply business is poured back into the development of new equipment to help make your business more profitable.

That's why it's a peach of an idea to order supplies from the Stromberg-Carlson branch in your area.

In Atlanta our Sales Office and Warehouse is located at

750 Ponce de Leon Place, N. E.
Telephone Number—Trinity 5-7467.
You call us, hear?

"There is nothing finer than a Stromberg-Carlson"

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

Electronic and communication products for home, industry and defense

A. B. Chance Co. Promotes Isbell and Hansen

Promotions for two A. B. Chance Co. sales executives, Jackson T. Isbell and L. C. Hansen, have been announced by F. Gano Chance, president of the company. Mr. Isbell of San Francisco,

J. T. ISBELL

was named assistant to the president, and Mr. Hansen of Centralia, Mo., was appointed vice president of marketing. Both assignments were effective Feb. 1.

Mr. Isbell, one of A. B. Chance Co.'s first salesmen, joined the company in 1928, and advanced to sales manager in 1936, west coast division man-

L. C. HANSEN

ager in 1946 and, since 1949, has been vice president in charge of sales. He was elected to the Chance board of directors in 1933, shortly after the company was first incorporated.

In his new position, Mr. Isbell will handle special assignments for the company president, involving the company s expansion program, and the development of new markets for Chance products.

Mr. Hansen started with the A. B. Chance Co. as a sales engineer in 1947, became assistant to the sales manager in 1948, sales manager in 1950 and director of marketing in 1957. He was elected to the company's board of directors in 1955.

As vice president of marketing he will be responsible for administration of all phases of the company's sales program.

Barber-Greene Names Root Chief, Ditcher Sales

Barber-Greene Co., of Aurora, Ill. has announced the appointment of John L. Root, of Aurora, to be its chief, ditcher sales.

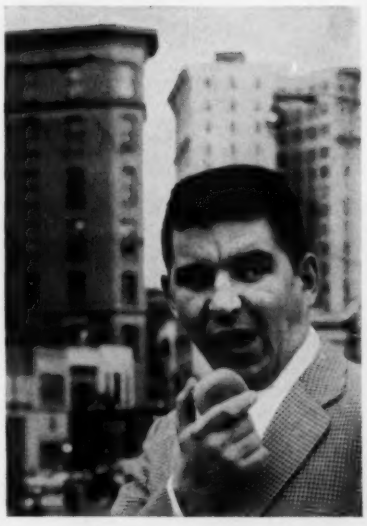
A native of Cleveland, O., Mr. Root has had eight years of background in the manufacturing and sales of ditch-

J. L. ROOT

ers and other construction equipment to the utilities, pipeline and municipal fields. He is also a veteran of three years U. S. Navy service.

Mr. Root is now responsible for the promotion of the entire Barber-Greene ditcher line in all fields and for all applications and will offer direct field sales assistance to B-G distributors in all parts of the country.

His appointment is one of several steps announced within recent months, directed toward expansion of the Barber-Greene ditcher line and its markets. The company states it is now the only manufacturer of all three basic ditcher types; i.e., vertical boom, wheel and ladder. Two new crawler mounted Barber-Greene ditchers, the Model 774 wheel type and the Model 784 vertical boom type, have recently been released to the field, and additional models are being field tested before production release.

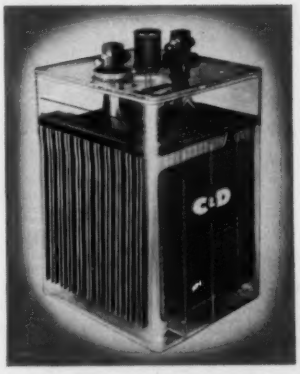


A peach of a battery ...PlastiCal® by C&D

Here's a dependable power supply for you with a life expectancy of *25 years!* It's the C & D PlastiCal telephone battery, and when we say it will last 25 years, we're thinking about *full float service.*

You get this extra-long life because C & D PlastiCal batteries have advanced lead-calcium type grid construction.

If a 14-year life expectancy will fill your needs, C & D has an economical battery for that, too. It's the PlastiCell battery, using high-tensile lead antimony grids.



Specify C & D Batteries when you order from the Stromberg-Carlson branch sales office in your area.

STROMBERG-CARLSON

A DIVISION OF GENERAL DYNAMICS CORPORATION

SALES OFFICES: Atlanta 6, Chicago 6, Kansas City 8, Rochester 3, San Francisco

There's an American Beauty in the right model, the correct tip size, the proper watt input, to do any soldering job quickly, properly, efficiently—whether it's used for a single connection or on 'round-the-clock production.

TEMPERATURE REGULATING STAND

For controlling tip temperature of an electric soldering iron while iron is connected to current and not in actual use.

Write for descriptive literature and prices.

AMERICAN ELECTRICAL HEATER COMPANY

DETROIT 2, MICHIGAN

170-H

Copperweld Names Two Regional Sales Managers

F. E. Leib, manager of sales of Copperweld Steel Co.'s wire and cable division, Glassport, Pa., announces the appointment of Lou McGuire as eastern

LOU McGUIRE

sales manager with headquarters at 225 Broadway, New York, N. Y. Mr. McGuire was previously district manager of the Pacific northwest at Seattle, Wash. Prior to that, he was district manager at Memphis, Tenn. He assumes his new position with over 25

RALPH CRAIG

years of experience in the power, communications, and railroad industries.

Replacing him as Pacific northwest district manager is Ralph Craig, who was manager of special products at the home office in Glassport. Mr. Craig, who has been associated with Copperweld for 20 years, has served the company in many important capacities in the sales and engineering departments. He will make his headquarters in Seattle.

IT&T Plans New Research Building in Nutley, N. J.

Edmond H. Leavey, president of International Telephone & Telegraph Corp., on Feb. 17 announced plans for a new research building to help centralize developmental operations of its Federal Telecommunication Laboratories in Nutley, N. J. The Nutley laboratories are the domestic research headquarters of the worldwide IT&T communications and electronics manufacturing system.

"The new building," Leavey said, "will enable the IT&T division to consolidate under one roof the operations of its radio communication, radio navigation and electronic systems laboratories. The building's central location will permit easy access to other IT&T laboratories and outdoor test equipment in Nutley, consolidating our activities and improving our overall efficiency in meeting the commercial and military demands for new electronic systems and components."

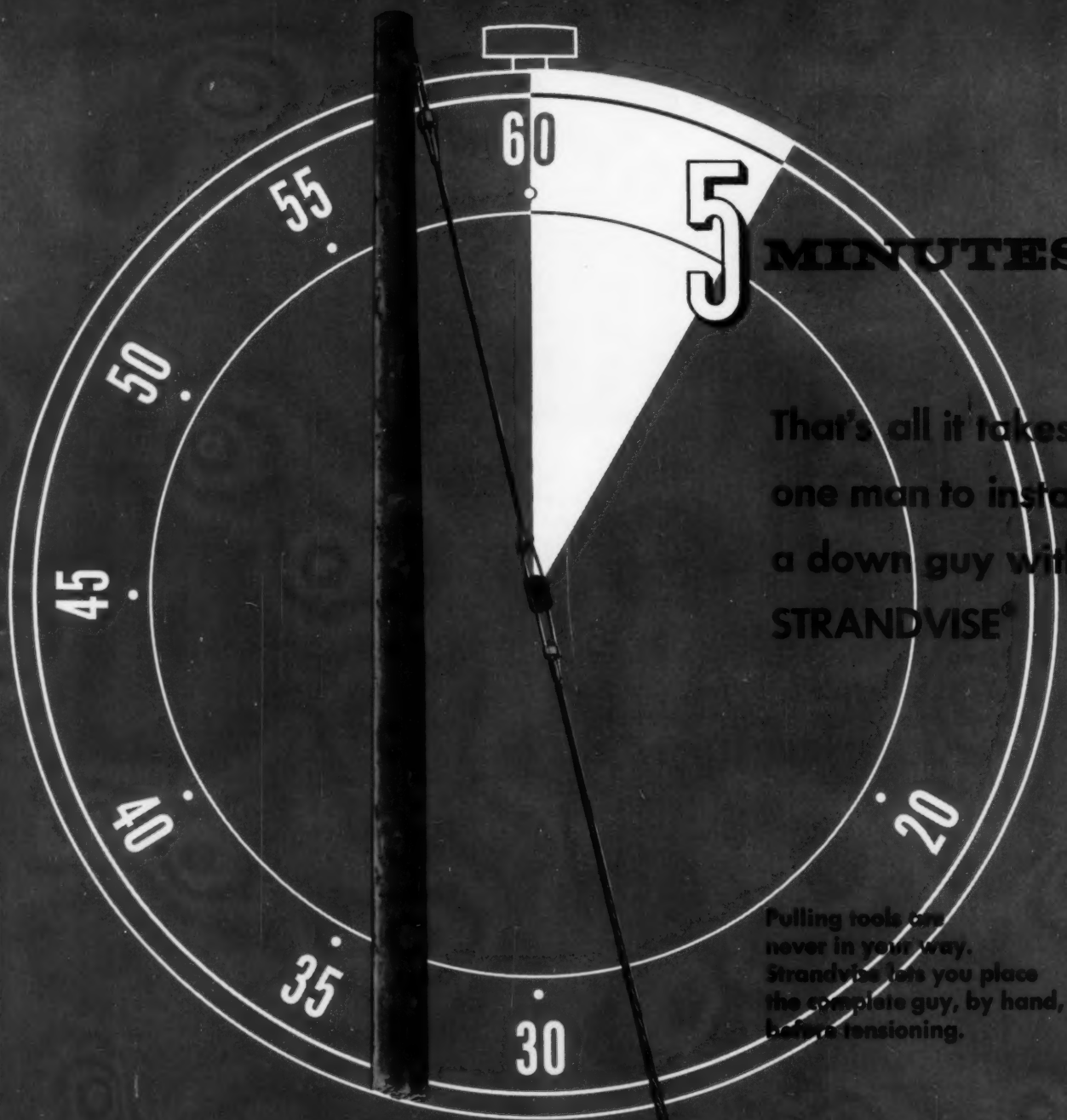
The structure, scheduled for completion late this year, will accommodate a work force of about 600 electronic engineers and other personnel. It will be located on the company's 91-acre property in Nutley, adjoining the company's main laboratory building. It is also located within half a mile of the one-million-square-foot manufacturing plant of Federal Telephone & Radio Co., an IT&T division.

The new building will provide about 100,000 square feet of floor space, bringing the laboratories' total space to more than 450,000 square feet, including a recently opened laboratory at San Fernando, Cal.

The new laboratory building will be a two-story, 262 feet x 194 feet, aluminum-sheathed structure of cinder block construction with acoustical, hung ceilngs. Its style will blend with that of the company's other nearby buildings.

Maintain Free Enterprise

"One of the basic requirements for victory in the 'cold war' today is to demonstrate before all the world the clear superiority of our free enterprise system . . . our American free enterprise must be maintained as a dynamic, productive system, operating at a high, relatively stable level, and expanding sufficiently to satisfy our national expectations of increasing livings standards. Only by so demonstrating the superiority of a free economy over state-managed ones can we show the world that the American ideal is still the hope of the future."—RICHARD F. SENTNER, *executive vice president, United States Steel.*



STRANDVISE is made for strand sizes 3/16", 1/4", 5/16", 3/8" and 7/16". Samples for trial will be supplied without cost on request.

A HALF CENTURY OF SERVICE TO THE UTILITIES

Reliable ELECTRIC COMPANY • FRANKLIN PARK, ILL.

Ask Reliable's man for a showing of our 15 minute sound-color film, "The Strandvise Story" You'll see how it's made, how it's tested, how it's used.

Superior's

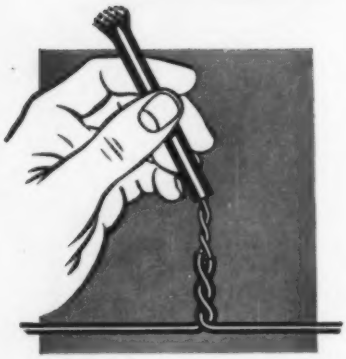
"Super-Splice"®

is

safe

and

sure!



"Super-Splice" makes splices waterproof . . . from inside out!

Sealed at one end, this plastic splice sleeve is filled with an insulating and waterproofing compound.*

Economical "Super-Splice," a Superior exclusive, makes the splice permanently as good as the cable . . . yet it can be re-entered easily. The compound never hardens or oozes out no matter what the temperature.

Prevent leakage currents and breakdowns in the presence of moisture... good for 25,000 v.d.c. Order "Super-Splice" NOW!

*A Dow-Corning silicone compound.

An REA Standard.

"Super-Splice" is available for use with straight, butt or bridge splices.

For further information on economical "SUPER-SPLICE", write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

O. H. STELTER JR.

DONALD MANSFIELD

Holan Corp. Announces Four New Sales Appointments

A sales and sales engineering manager, a district sales manager, and two regional salesmen have been added to the selling group of Holan Corp. of Griffin, Ga.

O. H. Stelter Jr. is the new manager of sales and sales engineering. A graduate of the University of Colorado,

T. F. SAVAGE JR.

Mr. Stelter comes to Holan from Koenig Iron Works, Houston, Tex., where he was a sales engineer. Previously, he had been an engineer for two other Texas firms and has served as an aerial engineer for the Air Force.

The new district manager for Texas and Oklahoma is Anton C. Adams, formerly a southern sales representative for McCabe-Powers Auto Body Co. Mr. Adams, a University of Virginia graduate, was an air force fighter pilot.

Another former McCabe-Powers man, Donald Mansfield is now selling for Holan in North Carolina, South Carolina, and Virginia. Mr. Mansfield attended the University of Tennessee.

Thomas F. Savage Jr., the other regional salesman appointed, has worked in sales and manufacturing for Holan for two years. In his new position, Mr. Savage will represent the company in Florida, Alabama, and Mississippi. He is a former naval aviator and he attended Monmouth College and Central Y.M.C.A. College. He was with John Deere Corp. before going to Holan.

A. C. ADAMS

The sales appointments were announced by Robert R. Rector, vice president in charge of sales for Holan Corp. The company manufactures and sells Holan service and line bodies and power equipment in the Southern states.

Need For New Friends

"If a man does not make new acquaintances as he advances through life, he will soon find himself left alone. A man should keep his friendship in constant repair."—JOHNSON.

30 Day Free Trial Offer!!

The All New Terminating Board Model TBZ

for use with the Murphy Cable Tester

We'll gladly send one TBZ Terminating Board to each division or area for a 30 day free trial. No obligation! If you don't see that the fabulous TBZ will *save you money, save hours of time, is simpler to use,* and *has a wider variety of uses,* send it back in 30 days and there will be no charge.

TBZ's simplified construction uses only ten standard binding posts instead of 20 special ones . . . ten slots instead of 101 holes as in standard tag-boards. No holes to thread wires through. Lay them speedily in ten clearly numbered slots.

Only $25 each. Greater savings when ordered in quantities. Write for additional information on the TBZ as well as a complete brochure of all Murphy products for the telephone industry.

MURPHY ELECTRONIC RESEARCH DEVELOPMENT MANUFACTURE
ENGINEERING LABORATORIES, Inc.

4419 Tulsa **Houston 24, Texas**

SAVE! Arrow's T-25 Staple Gun Saves You Time and Money!

For Wire Up To ¼" in Diameter . . . Bell, Thermostat, Radiant Heat, Telephone, Inter-com, Burglar Alarm, etc.

Tapered striking edge gets into tight corners!

T-25 AUTOMATIC STAPLE GUN *for wires up to 1/4" in diameter. Uses 3/8", 7/16" and 9/16" round crown staples, galalloy coated for high rust resistance.*

LIST $15.

SAFE!
Can't damage wire because staples automatically stop at right height! Won't even break ¼" hollow glass tubing.

FAST!
Proved by test 6 times faster than old hammer method. Saves you 70% in fatigue and efficiency . . . saves many dollars a year.

HOLDS!
New staples get tremendous holding power from tack points that spread to lock themselves into wood!

Write for catalog and information. **ARROW FASTENER CO., INC.** ONE JUNIUS STREET, BROOKLYN 12, N. Y.

The Tool that Gets it Done!

The American® POWER-PULL combination hoist and puller takes the strain out of line construction. Designed for one-man operation, it gets the job done easier and faster—saving man-hours in line crew performance.

This quality constructed tool is built to take it—available in ¾ ton to 1½ ton capacity. Order POWER-PULL from your equipment dealer or write for catalog sheet and price list today.

The American Gage and Manufacturing Co.
125 Bayard St., Dayton 1, Ohio — U.S.A.

Bashlin's
Quality
FOR OVER 30 YEARS
Choice of Experienced Linemen

FULL FLOATING
SHIFTING DEE
BODY BELT . . .

Bashlin Quality again is outstanding in this "safety first" body belt. Comfortable, with tools in easy reach . . . Doubly Safe because Bashlin Body Belts have the additional Nylon Safety Feature.

The Bashlin Quality Line of Linemen's Safety Equipment is complete . . . Buy the best from a manufacturer with Long Proven Experience.

You Can't Afford Anything
LESS Than the BEST—
Buy BASHLIN
Highest Quality For Over 30 Years
Distributors in Strategic Areas in U.S.A.

EXPORT: Copperweld Steel International Co.
IN CANADA: A. B. Chance Co. of Canada Ltd., Toronto

Ask for . . .
CATALOG NO. 156

W. M. BASHLIN CO.
GROVE CITY, PA.

Stromberg Names Control, Manufacturing Managers

Howard G. Strassner has been appointed manager of manufacturing, and Malcolm P. Herrick has been named manager of quality control for the Telecommunication Division of Stromberg-Carlson, according to an announcement on Feb. 21 by John H. Voss, vice president and general manager of Telecommunication.

H. G. STRASSNER

In his new position, Mr. Strassner will have charge of production, inspection, and plant maintenance.

M. P. HERRICK

Roy W. Jones will succeed Mr. Strassner as manager of production, and William J. Conley Jr., will become manager of plant maintenance. Raymond E. Golemb continues as manager of inspection.

Mr. Herrick will establish a separate quality control department and will be responsible for insuring that the final product meets engineering and manufacturing standards.

We have in stock, all sizes and types of spinning wire. We will be happy to quote current prices on any amount.

For quick service write, wire or phone.

SPINNING WIRE TO FIT ANY SPINNER

- COPPER
- COPPERWELD
- ALUMINUM
- GALVANIZED
- STAINLESS STEEL

Write or Phone to

SERVING THE GROWING INDEPENDENT TELEPHONE INDUSTRY
CABLE SPINNING EQUIPMENT CO.
3100 Topeka Ave. Topeka, Kans.

New Leich Representative For Kan., Mo., Neb.

D. C. Gibson, president of Leich Sales Corp., has announced the appointment of John D. Mooney as the new Leich representative for eastern Kansas, western Missouri, and eastern Nebraska.

J. D. MOONEY

Mr. Mooney succeeds H. A. White, who has retired. Mr. White, 75, represented Leich for 10 years, and is very well known throughout the entire Independent industry.

Mr. Mooney has recently completed a training program in Leich's Chicago office, and the Genoa, Ill., plant and warehouse.

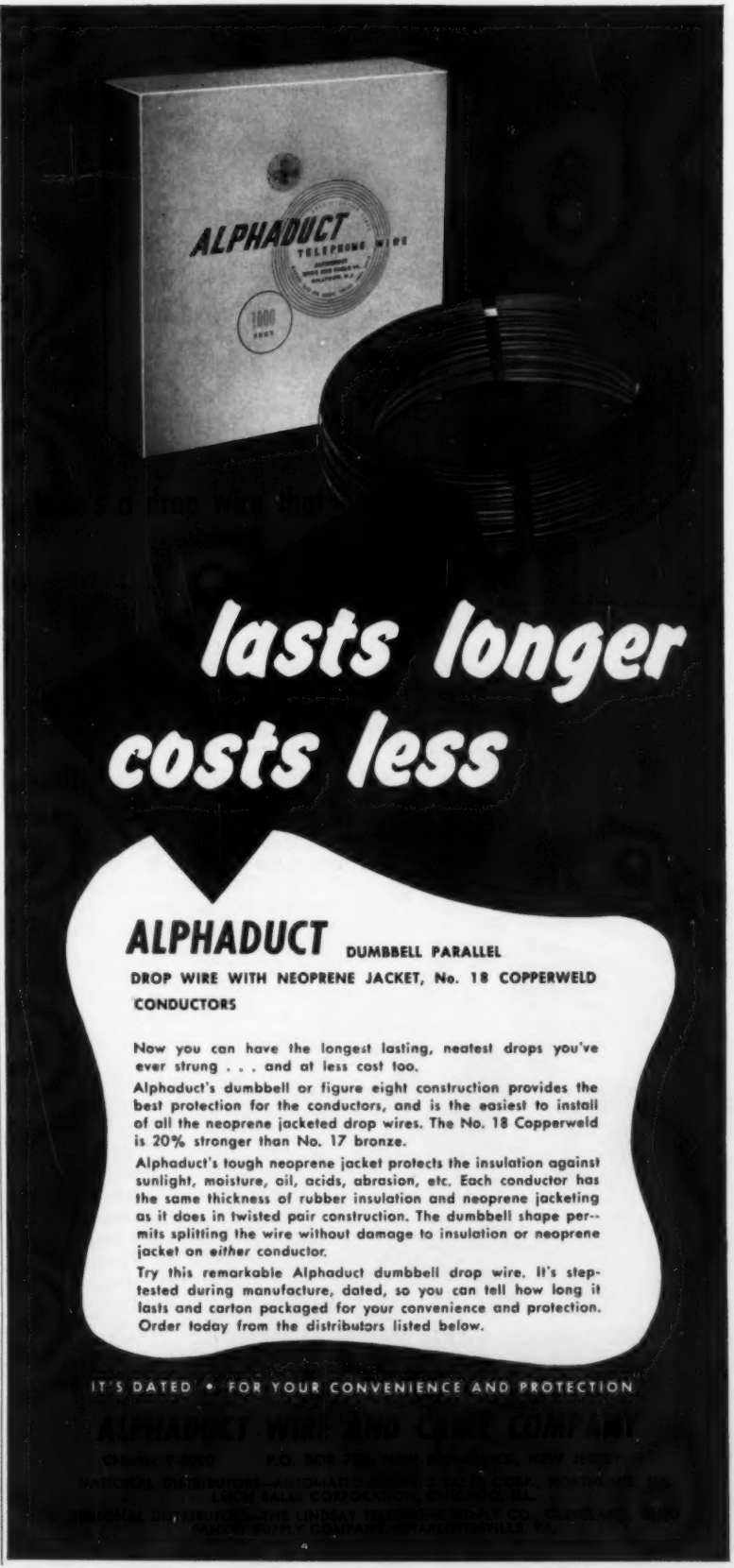
A. B. Chance Co. Offers College Scholarships

Three college scholarships for Centralia (Mo.) high school graduates will be offered annually by the Chance Foundation beginning with the 1958 senior class, it was announced on Feb. 10.

The scholarships and their value are: Engineering or Physical Science, $3200 ($800 per year for four years); Business Administration or Teaching, $2,800 ($700 per year for four years); Commercial, $1,000 ($500 per year for two years).

The scholarships will be offered to encourage and enable serious, hard working students to obtain a higher education so that they may be better prepared to meet the obligations of responsible citizenship, the announcement stated.

Also, the scholarships will be awarded to students, regardless of need, who meet the established standards by their own efforts and initiative.


ALPHADUCT
TELEPHONE WIRE
1000 FOOT
lasts longer
costs less
ALPHADUCT DUMBBELL PARALLEL
DROP WIRE WITH NEOPRENE JACKET, No. 18 COPPERWELD CONDUCTORS
Now you can have the longest lasting, neatest drops you've ever strung . . . and at less cost too.
Alphaduct's dumbbell or figure eight construction provides the best protection for the conductors, and is the easiest to install of all the neoprene jacketed drop wires. The No. 18 Copperweld is 20% stronger than No. 17 bronze.
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Try this remarkable Alphaduct dumbbell drop wire. It's step-tested during manufacture, dated, so you can tell how long it lasts and carton packaged for your convenience and protection. Order today from the distributors listed below.
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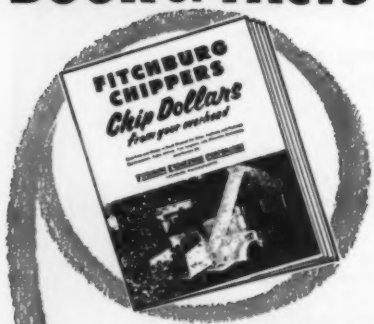

Tells how to "Chip Dollars" from your overhead! Detailed cutaway drawings of Fitchburg Chipper in color. Specifications, diagrams, charts, plus money-saving reports and experiences of others.

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Company_____

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Sales executives, shown here in their conference room, direct Preformed sales in the United States and abroad.

Preformed Opens New Research Center

The opening of a new research and engineering center by Preformed Line Products Co. of Cleveland, O., is another milestone in the history of a company that has become a leader in its field in only 10 years.

Preformed Line Products Co. was founded in 1947 by President Thomas F. Peterson, and introduced its first product—the Preformed armor rod—in the same year. The Preformed armor rod led to the development of other preformed line accessories—dead-ends, guy-grip dead-ends, splices, lineguards, splice shunts, lashing rods, spacers, patch rods, tap armor. More recently, Preformed has introduced two new concepts in suspension—Armor-Grip Suspension for supporting conductor and Twin-Grip Suspension for supporting static wire. All told, Preformed makes 40 kinds of line accessories in some 6,000 designs.

The development and acceptance of new products have required more and more manufacturing space and more people. Beginning with rented space, Preformed facilities have expanded to include two plants in Cleveland and one in Palo Alto, Cal.—plus the new research and engineering center. Total floor space is 106,000 square feet, and there are 300 employes.

In addition to expanding as a company, Preformed has been very active in assuming its share of responsibility to the industries it serves. Preformed contributes to private endowments aiding college students interested in the utility industries. One of the beneficiaries of Preformed aid is Stanford University whose high-voltage testing laboratory is adjacent to the company's West Coast plant.

Since its beginning, Preformed has been guided by Mr. Peterson, who, before he founded his own company, devoted 23 years to engineering and sales of insulated cable and overhead transmission at American Steel & Wire Co. He is responsible for most of the patents on Preformed products.

Operations vice president and treasurer is Albert Bonds, also with American Steel & Wire for many years. Another vice president is Jon R. Ruhlman, director of research and head man at the new center. Mr. Ruhlman joined Preformed after serving as an aeronautical engineer in the Air Force. Philip M. Schloss, general sales manager, directs a sales organization that includes two district offices and 34 representatives in the United States and abroad. Recently, Preformed has embarked on an extensive foreign licensing operation to benefit utility companies throughout the world.

Life-Saving Technique

Over a recent holiday week end, traffic fatalities in the United States established a postwar record, and the total of 160 was well above predictions. An outstanding exception to this general rule was provided by Connecticut, where there was no traffic death. The state has been waging a tough war against speeders. Licenses are suspended for 30 days on the first conviction; 60 days on the second, and indefinitely on the third.

Need For Moderation

"Abundance without discretion is plain penury."—MATTEO GRIBALDI.

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CIRCUIT THEORY and DESIGN

By John L. Stewart, *California Institute of Technology*. Stressing modern, powerful pole-zero design methods, this book applies modern network theory to the understanding of vacuum tubes and feedback systems.

The author avoids use of abstract mathematics, yet gives data and design procedures of practical significance, discussing a wide variety of specific devices. The pole-zero design methods, given in easy-to-use form, show development of design for a large variety of circuits with and without vacuum tubes, and for systems with and without feedback. This book is a *must* for anyone interested in design and research in linear systems. **1956. 480 pages. 463 illus. $9.50.**

For sale by:

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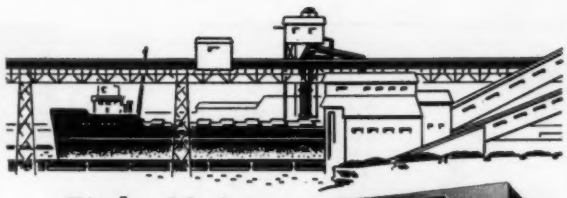

Eight Noisy Car Shakers Can't Stop Phone Talk in this Acousti-Booth!

Nowhere could the Burgess-Manning "Hear-Here" Acousti-Booth be put to a more severe test than at the Unloading Station of the Rail-to-Water Transfer Corporation dock! Supt. Jack Best writes: "We have several of your booths that are performing very satisfactorily. We can transfer a million tons of coal a month from cars to lake steamers and all this coal is dumped from the cars, with the aid of 8 noisy car shakers, within a few feet of these booths. In spite of this noise, which makes it almost impossible to converse at the top of our lungs in the open, we can carry on phone conversations, necessary for our complex operation, inside your doorless booths!"

"Another "Hear-Here" Booth is installed in our sub-station, where 4 motor generators make phone conversation impossible without it."

Burgess-Manning "Hear-Here" Acousti-Booths make important phone conversations possible in even the noisiest locations. Avoid errors, misunderstandings—install the Burgess-Manning "Hear-Here" Acousti-Booths.

AVAILABLE IN STYLES TO SUIT EVERY PURPOSE
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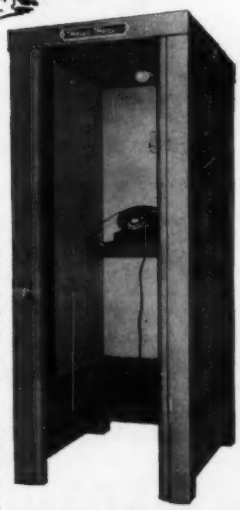

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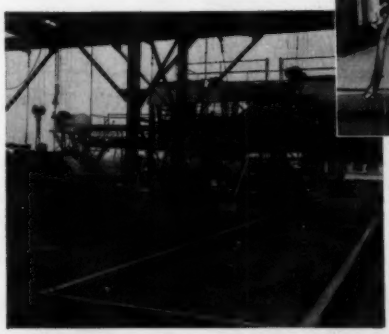

"Hear-Here" Acousti-Booth at Unloading Station. 1,000,000 tons of coal a month can be unloaded within a few feet of this booth, yet phone conversation can be carried on freely inside this doorless booth.

Rail-to-Water Transfer Corporation, Calumet River Dock in Chicago.

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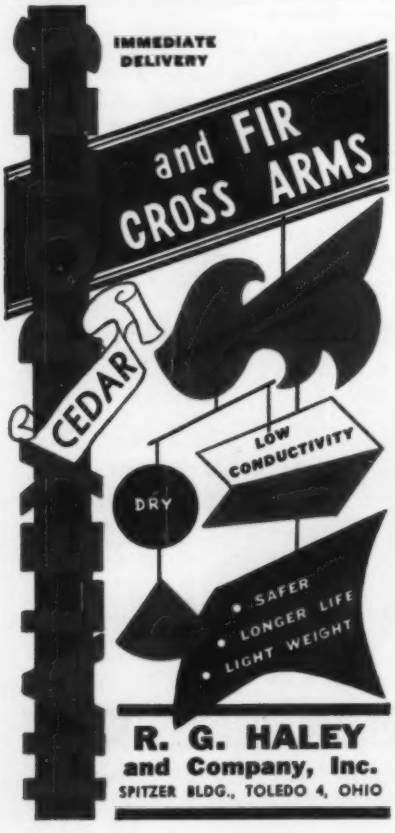

R. G. HALEY and Company, Inc.

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Helpful Literature

TEST SET — A new two-page Data Sheet E-53(11) describing the Type U test set is now available from Leeds & Northrup Co.

The data sheet describes the use of the instrument in locating line and cable faults in signal communication circuits. Designed for use by linemen, the Type U test set can identify faulty wires in cables; locate grounds, shorts and crosses by the Murray, Varley, Hilborn and other loop tests; and measure conductor resistances. A schematic diagram illustrates the operation of the instrument. Complete specifications are listed and accessories are tabulated. Request HL393.

•

WEED HERBICIDE — A new preemergence herbicide for long residual control of grassy and broadleaf weeds along utility rights-of-way, around buildings, pole yards, etc., has been announced by Geigy Agricultural Chemicals, division of Geigy Chemical Corp.

The new herbicide, Simazin 50W, a triazine compound, is not a contact or foliage herbicide, but acts on the plant roots, and, for best results, it should be applied just before germination or emergence. Before using Simazin 50W for long residual weed control, existing plant growth should first be removed by use of contact herbicide, or by mowing or plowing under.

Simazin controls a wide variety of grasses and broadleaf weeds including barnyard grass, witch grass, yellow foxtail, wild oats, crabgrass, broadleaf plantain, dandelion, lamb's quarters, pigweed, ragweed, nightshade, purslane, velvetleaf and mustard.

The company states that the new herbicide has low toxicity to humans and domestic animals. It is non-corrosive and can be removed from spraying equipment by merely flushing thoroughly with water.

Since there is practically no lateral leaching, Simazin 50W can be used adjacent to crop land and ornamental areas. Lack of phytotoxicity to foliage minimizes drift hazard, the company states.

Simazin 50W containing 50 per cent active ingredient is available in cases of 10 x 5 pound bags and 50 pound fiber drums. Request HL394.

•

ALL-WHEEL-DRIVE TRUCKS — An eight-page full-color catalog describing and illustrating six heavy-duty International all-wheel-drive truck models of cab-forward design has been issued by the motor truck division of International Harvester Co.

Included are the four-wheel-drive International models AC-170(4 x 4) and AC-180(4 x 4) with GVW ratings of 18,000 and 20,000 pounds respectively, and four six-wheel-drive International models in the ACF-170(6 x 6) and ACF-180(6 x 6) series with GVW ratings from 22,000 to 33,000 pounds.

All units described in the catalog are available with either gasoline or LPG engines. Request HL395.

•

FILING COST GUIDE—Guides for measuring filing costs and results along with a detailed plan of action to improve filing efficiency are available in

TELEPHONY PUBLISHING CORP.

608 S. Dearborn St.
Chicago 5, Ill.

Please have the manufacturer send me without obligation further information on the products described in the following numbers:

HL393_____; HL394_____; HL395_____; HL396_____;

HL397_____; HL398_____.

Name.....Title.....

Company.....

Street.....

Town and State.....

3/15/58

a 28-page manual, "How to Measure Your Filing Costs and Efficiency," published by Remington Rand Division of Sperry Rand Corp.

Revealing that the average cost of creating the contents of a standard four-drawer file cabinet is nearly $10,000, the manual underlines the importance of determining that full value is received from the filing system.

Among the practical tools provided are formulas for measuring "finding efficiency," "filing reference rate," and "file clerk efficiency." The manual indicates, for example, that if the ratio of references not found to references found is greater than ½ of 1 per cent, the filing system warrants immediate attention.

A list of 19 check points is included to help management uncover the strengths and weaknesses of the filing operation.

A reference chart provides at a glance the cost of operating a four-drawer file, depending upon the average salary of file clerks, and the average number of files handled by each clerk.

Five simple rules for file economy will help management obtain top efficiency from the filing system. Request HL396.

STATIONARY BATTERIES—The Industrial Division of Gould-National Batteries, Inc., has published a new 12-page catalog to help industrial battery users select and install the new Gould Plante batteries in telephone control, switch gear, alarm system, signalling, emergency lighting and other services where batteries are used for standby power.

This new bulletin carries complete specifications and installation data for the new lightweight Plante batteries from 40 ampere-hour to the large 960-ampere-capacity cell.

Engineering specifications tabulated include ampere-hour capacity, discharge rates, over-all dimensions, weight per cell and electrolyte required.

In addition to illustrating the various properties of the compact Plastrite jar, an exploded view of the Plante cell shows battery components and new design features.

Lighter in weight than conventional containers, the new Plastrite jars save 30 to 40 per cent floor space, permit increased battery room capacity, and reduce storage rack requirements, the company states.

Concise installation data is given with recommended dimensions for storage racks in two-step, three-step and double-tier constructions. Scale drawings show rack construction. The discharge characteristics of the DPR, EPR and FPR cells are included in graphical form. Request HL397.

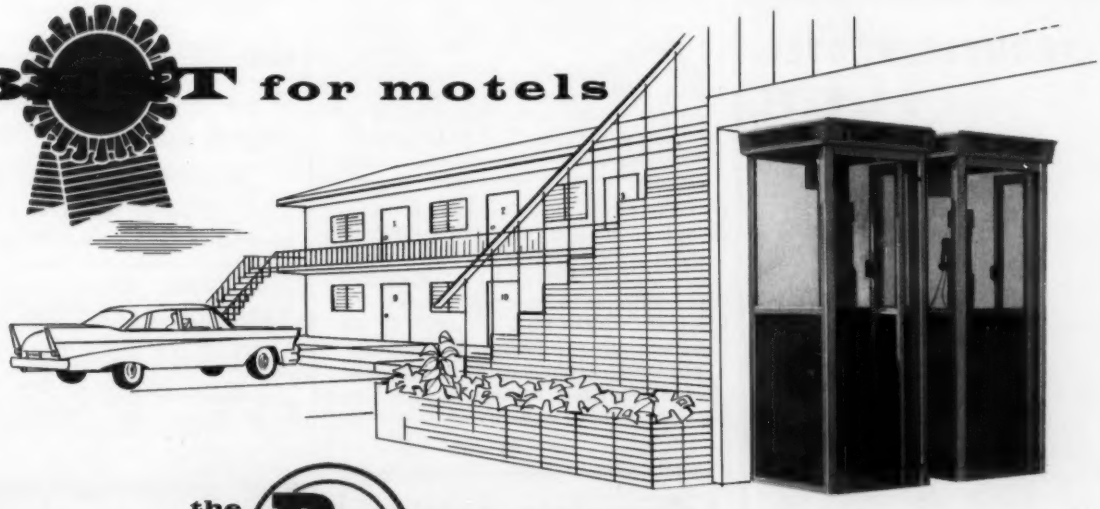
•

BRUSH DISPOSAL—A new 20-page booklet covering all phases of brush disposal has been published by the Fitchburg Engineering Corp.

This interesting and informative two-color book, titled "Chip Dollars From Your Overhead," gives complete information on Fitchburg Chippers. Cutaway drawings, specifications, diagrams, charts, and user reports, define operation and results.

Sections on specific application of the Fitchburg Chipper, cover telephone companies, line clearance contractors, cities, highway commissions, superintendents of public works, park and shade tree commissions, road commissioners, tree surgeons, and light and power companies. Factual information contained in excerpts of letters, tell how money and time was saved and brush disposal problems solved. Request HL398.

B[illegible]T for motels



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The Elbe File & Binder Co., Inc., Fall River, Mass., published an all-new, 116 page, loose-leaf & sales presentation catalog. It lists over 1500 stock items and hundreds of made-to-order binders. The features: 1. An exclusive loose-leaf planning section; 2. Helpful idea sections for increasing office and sales efficiency; 3. Special sections dealing with sales tools, custom-made products, advertising specialties, business gifts, and visual aids; 4. Dozens of all-new stock lines and advanced styles.

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ONE OF AMERICA'S LARGEST MANUFACTURERS OF LOOSE-LEAF PRODUCTS

Dept. T-2

L-M Names Manufacturing Vice President

Lloyd L. Black has been appointed vice president, manufacturing, for Line Material Industries, according to President R. G. Wheaton. He succeeds John M. VanVleet who resigned recently. Mr. Black has his office in the company's headquarters in Milwaukee.

L. L. BLACK

Mr. Black moves into his new position with a background in manufacturing and utility operations. After 20 years in utilities and industry, he joined L-M in 1946, serving initially as assistant manager of the company's transformer plant in Zanesville, O. In 1950, he was promoted to manager of the Zanesville facility, the position he held until his elevation to vice president. He is an electrical engineering graduate of the University of Maine.

Warren R. Higgins has been appointed acting manager of the Zanesville plant, Mr. Wheaton also announced. A 1949 graduate of Cornell with a degree in mechanical engineering, Mr. Higgins has acquired all his professional engineering and administrative experience in several positions with L-M. Most recently he had been assistant plant manager at Zanesville.

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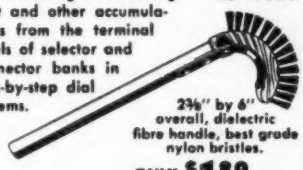

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Cascade Pole Co., P.O. Box 743, Tacoma, Wash.—Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co.—Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

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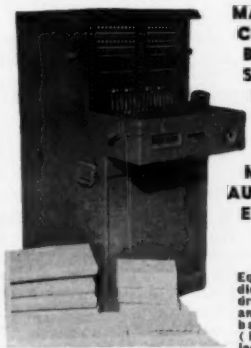
Capacity 100 lines, 50 equipped with drops and jacks, wired to 15 ft. 51/pair cable, 10 cord circuits with repeating coils and night alarm. Green hardwood cabinets. **$295.00**



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Equipped to handle 20 magneto drops and jacks and 40 common battery lines (lamps and jacks). Magneto circ., also equipped with magneto recall lamps for each cord circuit. OTHER DATA: 13 universal cord circuits, 1 emergency ringing circ., 1 dial circ., 4 trunk circ., two-way to common battery manual or dial (automatic) exchange, 3 outgoing line circ., 2 through line circ., 1 conference circ. (5 jacks), 1 switchboard test circ., 1 night alarm, 1 fuse alarm circ., 1 battery and ground circ., 1 power and heating circ. Selective ringing, two party. Power req. 22 to 30 v dc 90 amp-hr. Back of switchboard equipped with terminal strips for all connections.

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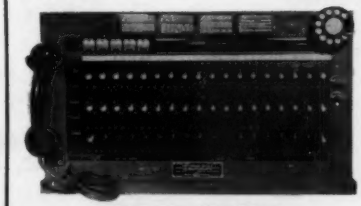

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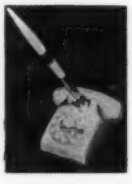

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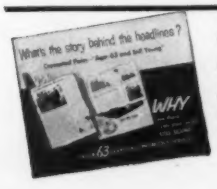

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